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S. A. **NO. 144**

MILITARY REPORT

ON

KASHGARIA

PREPARED IN THE
DIVISION OF THE CHIEF OF THE STAFF

INTELLIGENCE BRANCH
MILITARY RECORDS

Room 205-VI-3

INDIA OFFICE



SIMLA

PRINTED AT THE GOVERNMENT MONOTYPE PRESS
1907



7-213

IOR:LMIC/17/14/74

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P R E F A C E .

THIS report was originally compiled by Major S. Geoghegan with the aid of the authorities of whom a list is appended. It has been revised by Mr. Macartney, the British Agent in Kashgar, and by others with local experience.

All Officers to whom this book is issued are particularly requested to bring immediately to the notice of this office any errors they may notice, and also to forward from time to time any additional authenticated information which may reach them.

DIVISION OF CHIEF OF THE STAFF, } W. MALLESON, *Lieut.-Col.*,
INTELLIGENCE BRANCH; } Asst. Quarter Master General.
Simla, 5th January 1907.

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[Confidential.]

CHAPTER I.

GEOGRAPHY.

[General description ; Frontiers ; Mountain systems ; Deserts and Oases ; Rivers ; Lakes.]

GENERAL DESCRIPTION.

KASHGARIA, or Eastern Turkistan, consists of the south-western portion, or the Kashgar and Aksu divisions, of the Chinese province of Hsin Chiang. Although some authorities also include in it the districts of Hami and Turfan, these form part of the Urumchi division and also lie outside the basin of the Tarim, which may be considered to constitute Kashgaria.

It is bounded on the east and north-east by the Urumchi and Ili divisions of Hsin Chiang, on the north-west by the Russian provinces of Semerechensk and Ferghana, on the west by the Russian Pamir and Afghanistan, and on the south by Kashmir and Tibet.

The rivers flowing from the west and north unite into several well-defined systems, and these united form the Tarim which loses itself in the Lob Nor marshes. The valley is in shape an irregular quadrilateral. Its greatest length, from east to west, is about 1,000 miles, and its greatest breadth, from north to south, is about 500 miles. At the western end the valley is about 4,000 feet above the sea, and at the eastern end the elevation of Lob Nor is 2,750 feet.

The soil of the Kashgarian plains is brackish throughout the entire country. Oases afford the only fruitful land. In the southern portions of the valley there are vast tracts of crumbling sands. In the northern and central parts the sandy tracts are less frequent. They here take the form of narrow and low rows of hillocks. In the neighbourhood of the mountains the soil is covered with stones. The arable portion of Kashgaria is confined to a narrow belt skirting the highlands of the Thian Shan, Sarikol and Kuen Lun mountains. The country outside of this region consists of an almost uninhabited desert. But the belt above spoken of is not wide, and does not, throughout its extent, present a surface of fruitful land; such fruitful portions as are cultivated and dwelt upon are situated within oases. The largest of these, beginning from the east, are Karashar, Khurla, Kuchar, Bai, Aksu, Maralbashi, Kashgar, Yangi Hissar, Yarkand, Khotan, Keria, Nia, and Cherchen. Their situation depends upon the course of the principal rivers

of Kashgaria. Each of these oases is an area of green corn cut off from the others by a sandy waste, in some cases over 70 miles wide. Through all of the above-mentioned oases there runs a cart-road which is the main road of the whole country. In the desert part of the country small settlements exist along this road, and stations have been built along its course. Cultivation is kept up by means of irrigation. Each of the principal rivers is diverted (after issuing from the mountains) into several main streams, from which by a system of channels the water is let out on to the fields. The boundaries of these oases are very clearly marked. Wherever there is water there is life, and where the water ceases there is desert. On the other hand it pays to let the water out on to the desert, as in this way barren and even brackish tracts are made available for cultivation. The sparseness of the population is the principal cause of the relatively small area of land now under cultivation. The amount of land which is suitable for irrigation and cultivation is considerable, and might be taken up by a much larger number of inhabitants.

THE FRONTIERS.

Beginning at the Katun Daba or knot of hills at the head-waters of the rivers Loklon, Balgintaya, and Algoi, the frontier dividing Kashgaria from Urumchi and Ili runs along the watershed of the main Thian Shan mountains—the Narat, Khalyk, and Terskei Tau ranges—to the Muzart pass. This portion of the frontier, extending some 400 miles, runs along the watershed, the average height of which exceeds 10,000 feet, and is pierced merely by a few footpaths, passable only with light loads. These are the Odon Kuri, Narat, Dagit, Jambil, and Kok Su passes.

The frontier of Kashgaria with the Russian province of Semerechensk, from the sources of the river Naryn Kol to the pass of Bedal, was fixed in 1882 on the basis of the 3rd paragraph of the Chuguchak protocol of 1864 and the 9th paragraph of the St. Petersburg treaty of 1881. From the sources of the Naryn Kol the frontier line runs along the watershed of the main Thian Shan range in a south-westerly direction through the summit of Mount Khan Tengri to Mount Savabtzi. Here it leaves the main range and, making a gentle bend to the south, runs down the Savabtzi spur to Mount Boztagh, crossing the Kum Arik river at the foot of the spur. From Mount Boztagh it runs along the Kok Shal Tau range to the Bedal pass. On the pass are placed two frontier posts. The section described above extends 130 miles and is only pierced by two roads fit for pack transport, namely, from Prje-

valsk, in Russian territory, to the towns of Aksu and Utch Turfan, through the passes of Bedal and Kukurtuk. There are also the two passes of the Muzart and Kaiche. Both are very difficult.

From the Bedal pass to the Suok (Toun) pass the frontier was fixed in the year 1883 on the basis of the above-mentioned Chuguchak protocol and St. Petersburg treaty. Starting from the Bedal pass the frontier runs south-west and then west along the summit of the Kok Shal Tau to the Kogart pass. Here it turns south and crosses the Kok Shal (Ak Sai) river just south of the Chanchuchar pass. Thence it runs along the Kashgar Tau to the Korum luk pass, where it again turns to the west, with bends to the north and south according to the direction of the main range, and crosses the passes of Khojent, Boz Aigyr, Kurpe Bel, Kipchak, Terek, Urtasu, Kizil Kur, Turgat, and Suok (Toun). This section of the frontier, which stretches for 280 miles, in its eastern portion runs along the completely inaccessible summits of the Kok Shal Tau range. In its western portion, excepting some tracks through passes of extraordinary height, which are passable only by horsemen in single file, it is traversed only by two roads suitable for transport animals, namely, the Turgat and Terek passes between Fort Naryn and Kashgar.

From the Suok pass begins the frontier between Kashgaria and Ferghana. The frontier line runs in a southerly direction along the Alai range. It is crossed by the Burgui, Jitym Ashu, and Kogart passes. About three miles from the latter the frontier turns to the south-west, following the same range and crossing the Tuz Ashu, Kalmak Ashu, Talgui, Siedam, Savayardin, Tart Kul, and Kyz Dar passes. Near the Kyz Dar pass the line leaves the main Alai watershed and runs down one of the spurs in a south-westerly direction to the Karachal pass, thence it turns to the south along the same spur, across the passes of Ettik and Kara Bel; before reaching the Karavankul pass it turns to the south-east along a small spur and, crossing the river Kizil Su close to its junction with the Kosh Itak stream, reaches Irkeshtam. The portion of the frontier between the Suok and Irkeshtam—a distance of about 100 miles—is crossed by the principal caravan road between Kashgaria and Ferghana through Irkeshtam and over the Terek Davan or Taldik passes. In spite of the difficulties of the Terek Davan road it appears to be the only route by which the movement of loaded caravans is possible without interruption during almost the whole of the year. Towards the north from this road to Suok the frontier runs through a locality which is very inaccessible on account of the extremely intersected nature of the slopes of the Alai range in Ferghana, and the number of deep and rapid rivers which have to be crossed. All this frontier is marked by frontier posts.

From Irkeshtam to the Uz Bel pass the frontier was agreed to by the Commissioners on a map without previous inspection of the locality, and to this date it is unmarked. The line goes to the south, up the river Maltabar to the hill of the same name which is situated at the head of this stream. From the summit of Maltabar it bends somewhat to the west along the highest points of the Trans Alai range, then it bends again to the south along a spur and crosses the Markan Su near the Uz Bel pass. From the Markan Su river the frontier runs in a southerly direction along the Sarikol range to the Kalta Davan (or Kara Art) pass, thence bending to the west it goes along the same range across the Karazak pass to the Uz Bel or Kizil Jik pass. The above described section of the frontier has an extent of about 97 miles, and runs along high snow-capped mountains. On this account it is still less accessible than the preceding section. The roads which cross it from the Chinese post of Karangalik to the Pamir by the valley of the Markan Su, and the roads from the valley of the Kiyak Bashi to lake Great Kara Kul through the Kara Art, Karazak, and Uz Bel passes are suitable for loaded transport only at the end of summer after the streams have fallen, and at the beginning of autumn. During the remainder of the year movement through them ceases.

To the south of the Uz Bel the frontier is not definitely fixed by treaty. According to Russian accounts an agreement made in the year 1894 fixed the watershed of the Sarikol range as the temporary frontier of Kashgaria on the Pamirs.

¹ Beginning at the Uz Bel pass the temporary frontier, with some slight bends, runs eastwards across the Kiyaz, Ishi, and Oi-Balgin passes to the Aramati pass. Here it turns to the south and keeping in general to this direction as far as the Neza Tash (Shindi) pass it crosses in succession the Ak Berdi, Chon Kotai, Kum Jilga, Tokh Terek, Muzkuru, Sari Tash, Kulma, Tusakchi, Berdish, Chashman, Dun Keldik, and Okshirak passes. A little to the south of the Neza Tash it turns sharply to the east, across the Khan Uli pass, to the Taldi Kul peak, then again to the south as far as the Sarikoram pass. From the Sarikoram it turns to the south-west, across the Bayik pass, to the Povalo-Shvekovski peak (somewhat to the east of the Mikhman Uli pass) which, according to the protocol of the mixed International Commission of 1895, is the extreme point of the Russo-Afghan frontier on the Pamirs, and consequently the initial point of the Afghan-Chinese frontier.

The temporary frontier of Kashgaria on the Pamirs has a length of about 190 miles. In the summer, from May to September

¹ "Kashgaria," by Colonel Korniloff, pages 61-62.

inclusive, this section of the frontier is passable for loaded transport by almost all the above-mentioned passes. The passes of the Sarikol range, although of very considerable absolute height, are little raised above the surrounding valleys, and are distinguished by the usually gentle nature of their slopes. From September the passes are closed, and the Pamir frontier is passable only by the Ak Berdi and Kulma passes.

According to Chinese claims the frontier should have run south-westward from the Uz Bel to Tash-Kurghan on the Murghabi river, and thence south-eastward to the Mintaka pass. However, since 1894 the country to the north of the Pamir river has been occupied by the Russians and the latter are now inclined to argue that the correct frontier of the Pamir should be the Muztagh Ata and its spurs to the north-west and south-east.¹

The frontier of Kashgaria with Afghanistan, Kanjut, and the Kashmir states of Baltistan and Ladak has never been fixed by treaty, but the watershed of the Kashgarian rivers constitutes the limit of the Chinese claim. On this basis, the frontier of Kashgaria with Afghanistan westwards from the Povalo-Shvekovski peak consists of the summit of the snow-covered range which separates the valley of the Karachukar from the Little Pamir and is marked by the line of passes Mikhman Uli, Kipchak, Kukturuk, and Wakh Jir. From the Wakh Jir pass eastwards the frontier would be marked by the Kilik, Mintaka, Karachenai, Khunjerab, Shimshal, Mustagh, Saltoro, and Karakoram passes. The Chinese have erected a boundary pillar on the Karakoram pass and have occupied Suget to the north of it.

On the other hand the Mir of Hunza has certain rights of long standing in the Karachukar and Raskam valleys, and on this basis the line would run from Povalo-Shvekovski peak through Mintaka Aksai and the Ili Su (or Kurbu) pass to the Topa pass, and thence along the summits of the southern end of the Galioh range to its end at Bazar Dara. Here it would cross the Raskam river and run up a spur to the south to the main Karakoram watershed between the Saltoro and Karakoram passes.

From the Karakoram pass the line runs nearly east, along the crests of the range, for about half a degree, and then turns south to a little below the 35th parallel of North Latitude. Rounding then, what in our maps is shewn as the source of the Karakash, the line of hills to be followed runs north-east to a point east of Kizil Jilga and from there, in a south-easterly direction, follows

¹ "Kashgaria," by Colonel Korniloff, page 141.

the Lak Tsung range until that meets the spur running south from the Kuen Lun range which has hitherto been shewn in our maps as the eastern boundary of Ladak. This is a little east of 80° E.

From this point commences the frontier with Tibet, which runs along the watershed of the Keria river and thence along the northern ranges of the Kuen Lun mountains—the Russian, Tokus Davan, and Altyn Tagh ranges.

On the east the boundary between Kashgaria and the An Si (Nainshe) and Kunya Turfan districts of the Hsin Chiang province is not fixed, but it may be considered as coinciding with the before-mentioned actual boundary of the Tarim basin. This latter section of the frontier, for the greater part of its length, runs through uninhabited, desert, and waterless districts, but in its northern part it is intersected by the road from Kunya Turfan to Karashar, the only cart road uniting Kashgaria with the neighbouring provinces.

MOUNTAIN SYSTEMS.

The most important mountain systems of Kashgaria are the Thian Shan, the Sarikol, the Karakoram, and the Kuen Lun ranges.

The Thian Shan.

The Thian Shan bounds on the north the western Gobi desert and the Kashgarian basin, and extends far to the west into Russian Turkistan and Bokhara. From the Katun Daba range to the Suok pass the general direction is from north-east to south-west, and it spreads in its widest part (the meridian of the western end of Issyk Kul) to a width of 130 miles. It presents a system of parallel ranges joined by secondary ridges, some of the latter forming an angle of almost 60° with the main ranges. Most of these ridges lie in Russian territory.

The Katun Daba or knot of hills at the source of the Algoi and Loklon rivers is a magnificent elevation from which high ranges extend in all directions. The main range of the Thian Shan, here called the Katun Bogdo, is a mighty chain of mountains whose summits are covered with eternal snow, and which includes many unexplored glaciers. The passes lie at a height of not less than 10,000 to 12,000 feet. The northern slopes are steep, intersected by the deep ravines and gorges of numerous streams, and covered by vast pine woods. The southern slopes form a series of flat terraces completely bare of trees and separated by steep cliffs. The valleys are few, but of considerable extent. From the source of the Khutuk Be the character of the range changes, it becomes lower and the valleys spread out, forming magnificent alpine pastures. Further to the west the alpine meadows gradually change

into rocky masses spreading widely into the Dosh hills at the source of the Balgintaya. Still further to the west the main range, gradually becoming lower, spreads out at Abdur Cholon into a row of broad rounded heights, with an average elevation of 12,000 feet, covered in their upper zone by large rocks and completely bare of vegetation. On the southern slopes, as they become lower, the rocks change first to grass and afterwards to dense thickets of cotton bush. The northern slopes abound in springs and muddy swamps, giving rise to the numerous streams which feed the river Manas.

From the heights of Abdur Cholon the character of the range changes, it becomes sharply defined, rises gradually, and runs straight to the west to the knot of hills near the Odon Kuri pass, at the sources of the Kash and Kunges rivers. In all this section the summits are above the line of perpetual snow. The northern slopes are steep and covered in places by thin woods. The southern slopes towards the Little Yulduz are gentle and woodless. The width of the range in this section is about 6 miles.

In the above-described section the following passes are known,— the Abdur Cholon, on the road from the valley of the Little Yulduz into the valley of the Balgintaya; the Chogan Nur, Argasyn, Zagisti, Zach-Kelde-Muchuk, and Dunde Kelde, on the roads from the valley of the Manas into the valley of the Little Yulduz. All these passes lie at an average height of about 11,000 feet. Only the Zagisti, Chogan Nur, and Dunde Kelde passes are suitable for transport; the remainder are only passable with great difficulty.

The knot of hills about 14 miles to the north of the Odon Kuri pass is an inaccessible group covered with eternal snow. From this point branch out to the north-west and north the magnificent ranges of Arshan and Boro Khoro. The main range of the Thian Shan under the names of the Narat, Tospan Jutas Tau, and Karagay Tagh runs to the south-west, and a little to the north of the Karagay Tash (or Kok Su) pass it turns towards the south to the sources of the Kok Su river. In this section the range consists of a magnificent mass of granite and gneiss rocks. In the eastern portion it has an average height of about 10,000 feet, but in the western it rises from the Dagit pass, and most of its summits are above the line of perpetual snow. Its northern and western slopes are steep and covered with thick pine woods and excellent pasturages. Towards the valley of the Little Yulduz the range ends in a gentle and little known declivity.

Of the passes through the above described section of the main range the most convenient for the movement of transport are the Odon Kuri (9,800 feet) and the Narat (10,100 feet) passes on the

roads from the valleys of the Kunges and Tzanma (or Tsagma) into the valley of the Little Yulduz, and the Karagay Tash (or Kok Su) pass on the road from the valley of the Tekes into the valley of the Great Yulduz. Besides the above-mentioned ranges of Boro Khoro and Arshan, the following three important spurs run out to the north and north-west from the main range:—the Khara Nur or Khosushan Vali between the rivers Kunges and Tzanma; the Yavur between the Tzanma and the Jirgalan; and the Sari Tur between the Jirgalan and the Kok Su.

Both sides of these spurs are in the Ili province, and in conjunction with the main range they increase the importance of the latter as an obstacle on the roads from Ili to Kashgaria. The most difficult of access is the Sari Tur, which is covered with glaciers.

In Kashgaria the main range throws out three important spurs—the Borto Ula, the Khabtzagai Kettle, and the Kuruk Tagh.

Separating from the knot of hills at the source of the Balgintaya, the Borto Ula extends in a south-easterly direction as far as the Ulastai Chogan pass and to this point is a high level plateau. To the south of this pass the range rises, and bending to the east, extends in a high snow-covered chain to the Bergin Davan pass. In the western part of the range its northern slopes are steep, short, and for the most part covered with pine woods; on the Kashgarian side the range throws out long gentle spurs, separated by wide valleys, which abound in water, pasturage, and groves of brush-wood, poplar, and elm. From the Bergin Davan the range, under the name of the Argie hills, continues at first in the same easterly direction and then bends to the south-east. It crosses the road from Karashar to Toksun, and extends to the east, under the name of the Chol Tagh, to the districts of Hami and Turfan. As it recedes from the Bergin pass the range gradually decreases in height. Its southern slopes are very gentle and it presents the appearance of a series of slight cupola-shaped mounds; the northern slopes are steep, rocky precipices separated by deep, dark gorges. On the eastern end of the range there is an absence of water and vegetation. Of the passes through the Argie range the most important are the Ulastai Chogan (10,400 feet), Bergin Davan (13,080 feet), and the pass on the cart road from Karashar to Toksun. By its southern spurs, the Taskhar range and the desert Karakasil hills, the Argie unites with the Igerchi Tagh, a spur of the Kuruk Tagh, thus closing from the north-east the basin of Karashar and Kashgaria.

The second spur of the main range starts from the Abdur The Khabtzagai Kettle or Cholon heights, runs for a short distance Sarmin Ula Mts. in a southerly direction, and then turns sharply to the west, and filling with its ramifications the whole of the area between the Balgintaya and Khaidu Gol rivers, it bounds on the east and south the valleys of the Great and Little Yulduz. Almost the whole of this range is wild and rocky, and in places is above the snowline. The passes through the range lie at a height of about 10,000 feet. The best of them is the Khabtzagai Kettle, on the road from the valley of the Little Yulduz into the valley of the Balgintaya.

The Kuruk Tagh range, starting from the source of the Kungei The Kuruk Tagh range. Koksu river runs in a south-easterly direction as far as the meridian of

Karashar, where it turns sharply to the east, and then continues in this direction for about 200 miles, after which it again bends to the south-east towards the town of Sa Chu. In the north-west section of the range it is known by various local names—Tsudir Ula, Be Shan, Kok Teke, Bugur, etc. As far as the Kok Teke pass at the source of the river Dinar, the Kuruk Tagh range, here called the Tsudir Ula, is a snow-covered ridge with wild precipitous summits. The width of the range in this section reaches 65 miles. Its southern slopes, which are nearly four times as steep as the northern ones, are intersected by deep narrow ravines, and in their upper zone they abound in glaciers, which extend down to an elevation of 12,500 feet; below the glaciers the north-eastern slopes are covered with excellent alpine meadows. On the Kashgarian slopes the glaciers lie at a considerably greater elevation; at the bottom of the ravines watered by the little streams are found occasional trees and bushes; the open hillocks being covered by a thin vegetation consisting of grass and bushes which give to these slopes a monotonous character. From the Kok Teke pass the Kuruk Tagh becomes lower and narrower and loses its covering of snow. It falls gently towards the Konche river, and at the place where it is cut through by the river it is not more than 7 miles wide. From the commencement of the ridge to the Konche river only three passes are known,—the Kui Kule (11,500 feet) on the road from the valley of the Great Yulduz to the town of Kuchar, the Kok Teke (12,570 feet) and the Ulan Gilen on the roads from the same valley to the towns of Bugur and Yangi Hissar. The first two of these passes are extremely difficult in consequence of the steepness of their gradients and the large boulders and rocky fragments by which they are covered. The third is considered the best road from the valley of the Great Yulduz into Kashgaria. The Konche river cuts through

the Kuruk Tagh by a winding ravine whose minimum width is barely 550 yards. Through this ravine an excellent cart road was constructed in the time of Yakub Beg. In the narrowest part of the ravine is placed a small Chinese fort, closing the pass. Having turned to the east, the Kuruk Tagh separates into several ridges lying in an east and west direction, but, in general, it is a broad, flat range bounding on the south the Karashar basin. Towards the east the height of the range lessens considerably, and in its whole extent, as far as the eastern boundary of Kashgaria, it includes only two important peaks—the Chirailik Tagh (Saikhen Ula) and the Umalak Tagh. The southern slopes of the Kuruk Tagh are considerably higher than those of the north side. The desert plain, which stretches to the south from its foot, is covered in places with low ridges and flat heights which keep a general direction from west to east. The northern slopes of the outlying spurs of the Kuruk Tagh are gentle and little known. Between these ridges lie broad desert valleys, in which are met springs of fresh water, scanty pasturage, and brushwood. There are two very small oases—Kizil Synur and Pojunza. By degrees the mounds and plateaus of the northern ridges of the Kuruk Tagh unite with the southern ridges of the Chol Tagh. This portion of the Kuruk Tagh is crossed by the mule track from Dural to Turfan *via* Kizil Synur.

Leaving the Kuruk Tagh, the main range of the Thian Shan
 The Khalyk Tau or Muzart bends sharply to the west and continues
 range. in that direction about 150 miles to the
 Khan Tengri peak, under various local names—Terskei, Khalyk
 Tau, Yeshik Bashi, and Muzart. Here the main range is distin-
 guished by its extreme height and difficulty. Becoming higher as it
 goes to the west, it attains an average height of 15,000 feet; and
 the Khan Tengri, the highest point of the whole Thian Shan system,
 has an absolute height of 24,000 feet. The range abounds in glaciers,
 which in its western part are of enormous area, (the Japarlik,
 Muzart, and Khan Tengri glaciers).

From the northern slopes of the watershed, on the meridian of the town of Bai, a high spur runs out in a direction parallel to the main range. To the south of the watershed a number of spurs stretch out, which extend almost to the Aksu-Kuchar road. One of these spurs,—the Be Shan—even extends to the south of the road. Between the source of the Kok Su river and the Khan Tengri peak there exists only one pass across the watershed, namely, the Muzart pass, which lies on the shortest road from Kuldja to Aksu. The height of the pass is about 12,000 feet. The ascent from the northern side is by the narrow rocky ravine of the Urteng Muzart stream to its source in the glacier; on the southern

slope of the pass the road for about five miles runs along the gigantic Japarlik glacier which ends to the south in an almost perpendicular wall with a height of about 50 feet. It is very difficult for loaded transport.

In spite of the circumstances mentioned above, up to the time of Yakub Beg, a brisk trade was carried on through this pass between Kashgaria and Kuldja, and it was crossed by considerable detachments of Chinese troops. The Chinese maintain here a few posts for the protection of the road and to render assistance to passing caravans. The road was marked out by stone pillars and the most difficult places were improved. At the time of Ya'ub Beg all this was destroyed. At the present time the road, although somewhat repaired, is so neglected that it is passable only by small mounted detachments; its importance as a caravan road has also decreased. It is quite useless for a force of any size.

The Thian Shan range is divided into two parts by the Khan Tengri peak. The eastern, as we have seen, consists of one distinct range which constitutes the watershed between the Ili basin and the tributaries of the Tarim. West of Khan Tengri the Thian Shan presents a complicated system of plateaus and short ridges without any chief range. The whole locality, from the Khan Tengri to the Suok, and from the Issyk Kul to the southernmost ridge, is a huge elevated plateau with a surface broken up by numerous ridges. The greater part of these keep the general direction of from north-east to south-west, but some of them incline to one side or the other, at an angle of 60° . The highest elevation is at the Ak Shirak hills, near the sources of the Naryn and Irtash rivers. To the west of Khan Tengri the Thian Shan forms two watersheds,—the northern between the steppe rivers of Semerechensk and the river Syr Daria, and the southern between the Naryn river and the rivers of Kashgaria. The northern runs along the summits of the Terskei Tau (Ala Tau), Karakodjur Tau, and Kok Tal (to the north of lake Son Kul) ranges, and then, crossing the Kyzart and Karagol passes, along the Alexandrovski mountains, after which it is lost in the steppes in the general slope of the Aral-Caspian lowlands. The southern watershed separates from the northern near the Zaoka pass (at the source of the Irtash river) and runs in a south-westerly direction along the summits of the Ak Shirak range and the small hills at the sources of the Karasai and Ishtyk Su (a tributary of the Kum Arik), to the Kok Shal range, where it bends to the west along the summit of this range and then along an unnamed range from the Kubergen pass, and along the At Bashi Tau hills. It then follows the small Chirtash ridge, which separates the Chatyr Kul and Arpa valleys

and crosses to the frontier range, the summit of which it follows to the knot of hills near the Suok pass. The hills of the northern watershed are entirely outside the boundaries of Kashgaria and therefore they will be described briefly, and only so far as to explain their importance as an obstacle on the roads from Prjevalsk and Naryn into Kashgaria.

From Khan Tengri to the source of the Yak Tash, that is, in that section where the northern watershed is crossed by the roads from the valley of the Upper Tekes, and from Prjevalsk to the towns of Utch Turfan and Kashgar, it is an unbroken mountain chain with an average height of from 13,000 to 15,000 feet. The low elevation and the absence of perpetual snow occur only in the eastern end of the range at the source of the river Sariasi, where there are the two passes, Kashka Tur and Myn Tur, which lead from the valley of the Sariasi to that of the Tekes. To the west of this, the range rapidly rises in height and forms a high snow wall. Its northern slopes, which are covered with thick pine woods, are steep, but a long re-entrant falls to the Issyk Kul, above which the summit of the range rises some 6,000 to 9,000 feet. The southern slopes of the watershed form a short, in places steep and in others almost imperceptible, descent to the upland plateau which is called Syrt. The relative height of the range above this plateau varies from 2,000 to 500 feet, and is in places even less.

The roads from Prjevalsk to Utch Turfan and Kashgar cross the range by two groups of passes,—the eastern consists of the Turgen Aksu and Karakyr passes, and the western of the Kizil Su, Zouku Chak, Kashka Su, Zaoka (Juka), and Barskoun passes. All these passes have on the average not less than 14,000 feet of absolute height and are very difficult. In the winter only the Zaoka (Juka) is passable, as it is seldom covered with snow. From the source of the Yak Tash the northern watershed continues in the same direction and keeps its snow-covering almost to the point where it is crossed by the Tokmak—Naryn cart road.

To the south of the watershed, as far as the southernmost range, which constitutes the frontier between Kashgaria and Semerechensk, stretches the Syrt, as the Kirghiz call the high undulating uplands which cover the intertwining branches of the two main Thian Shan ranges. Between them lie broad upland valleys which have an average height of about 10,000 feet. The ridges which separate these valleys have not more than 1,000 or 2,000 feet of relative height, and have mostly gentle slopes, but many of them are covered with snow and glaciers. The chief feature of the Syrt is the complete absence of trees and the insignificant quantity of bushes, which are only met occasionally by the banks of the rivers

and in deep hollows ; its flat ridges are very deficient in pasturage, which is only to be found in the valleys and occasionally in the ravines of the summits.

Of the ranges which separate the valleys of the Syrt we will select only those which lie on the roads from Prjevalsk and Naryn to Kashgaria. The eastern end of the Syrt is filled by the high snow-covered and inaccessible ranges Sari Jas and Kulu Tau and the before-mentioned Ak Shirak, the valleys and ravines of which are blocked by glaciers. Of the passes through these hills the following are important,—the Kulu, Ishigart and the Ak Bel. The first two lie on the eastern (Karakyr) road from Prjevalsk to Utch Turfan, the last on the western road (*via* the Zaoka—Juka—pass). The Kulu pass is noted for its steep precipitous slopes, and is one of the most difficult in the Thian Shan. From the middle of October to the beginning or end of April it is covered with deep snow. The Ishigart and Ak Bel passes lie respectively on the eastern and western spurs of the Ak Shirak, and notwithstanding their considerable absolute height, both passes are very convenient for pack transport and are open almost the whole year round.

At the south-western end of the Ak Shirak, a small gently sloping ridge, constituting the watershed between the rivers Karasai and Ishtyk Su, unites it with the Borkoldai range. The latter separates from the southern frontier range near the Bedal pass, and after proceeding about 65 miles in a westerly direction, it ends in the angle between the Kara Kol and Karasai rivers. At its eastern end the Borkoldai is covered with snow and inaccessible ; at the western, or lower, end of the range is the low, but on its southern slopes steep and rocky, Chakyr Korum pass which is on the shortest road from Prjevalsk to Kashgar. About 35 miles from the Bedal pass the southern frontier range throws out to the north-west another ridge which this road crosses by the Kubergen pass. The eastern end of this range has not yet been explored. Near the Kubergen pass the range is a low rocky chain, little raised above the surrounding locality. From this pass the range bends to the west, rises, and is soon covered with snow. About 13 miles to the west of the Kubergen the range divides into two branches, the Naryn Tau or Koshunkur Tau to the north, and the At Bashi Tau or Ak Tash to the south. The Koshunkur Tau hills, after going to the north for a short distance, turn sharply to the west, filling with their spurs the area between the rivers Naryn and At Bashi. As far as the junction of the Great and Little Naryn rivers the range is covered with perpetual snow, and its sides are steep and rocky. Further on it becomes lower, and near the At Bashi ravine it changes into a row of low clay

hills whose northern slopes are steep. At the eastern end the range is passable by the Ulan pass, at the western end by the Char Karishmi pass (8,640 feet), which is on the Naryn-Kashgar road and is fit for wheeled transport.

The At Bashi Tau extends to the west as far as the Karga Jailga pass and is here covered with snow, then it bends to the southwest and becomes so much lower that its elevation over the neighbouring valleys becomes quite insignificant. In this saddle,—in length about 16 miles,—are the Balik Su, Kaindi, and Tuz Ashu passes with an average height of about 10,000 feet. From¹ the Tuz Ashu pass the range rapidly rises, and extends to the Shirikti pass as a rocky snow-covered chain, individual peaks of which attain a height of 16,000 feet. From this point the range again rapidly falls and, bending to the south, ends in the low Chirtash range which uniting with the southern frontier range, forms the watershed between the Chatyr Kul and Arpa valleys. The At Bashi Tau bars the roads from Naryn to Kashgar with the exception of the most westerly, which turns the range from the west by the Kara Kain and Arpa valleys. The passes are, from east to west,—the Karga Jailga, Balik Su, Kaindi, Tuz Ashu, Besh Pilchir, Taldi Su, Bogushti,¹ Shirikti, Keltebuk, and Tash Rabat. They all close almost simultaneously in September and open in the beginning of May. The best and most convenient are the Kaindi and Tash Rabat. The last is very steep and difficult (Cobbold, 1898). The heights of these passes are, according to Kaulbars—Tuz Ashu 10,700 feet, Tash Rabat 12,900 feet, Bogushti 12,590 feet, and Kaindi 11,150 feet. The Russian map of the southern frontier of Asiatic Russia shows the last named as 10,850 feet.

The southern range of these mountains, which forms for the
The southern or frontier greater part of its length the frontier
range. between Semerechensk and Kashgaria,

starts from the Khan Tengri and runs in a south-westerly direction as far as the Kum Arik² ravine. This portion of the range has no general name, but its various portions are called by the local Kirghiz by the names of the rivers flowing from them,—the Sariasi, Inylchek, Aksu, etc. The Chinese call the range Khan Tengri. In its eastern section, at the sources of the Sariasi and Inylchek, the range reaches an enormous height; it is entirely covered with snow, and in its ravines are gigantic glaciers,—the Semenoff, Mushketoff, and others. Individual peaks rise to a height

¹ On the Russian 40-verst map, dated 1877, Shirikti is shewn *west* of Keltebuk; on their 1889 map Shirikti is not marked and both passes are named Keltebuk (probably a clerical error).

² Kum Arik or Aksu river, *vide* Dr. G. Merzbacher's map, not the Janart, as in Colonel Korniloff's "Kashgaria."

of 20,000 to 25,000 feet above the sea. Near the river Kum Arik (Aksu) the range falls a little; nowhere, however, does its summit come below the line of perpetual snow. On the north the range descends by terraces with steep rocky sides, throwing out some high snow-covered spurs. The slopes of the range towards Kashgaria are steep, but considerably longer, and the spurs short and low. The highest of them starts at the source of the Kum Arik (Aksu) river and runs along its left bank to where it bends to the south. In this spur, which constitutes the frontier between Kashgaria and Semerechensk, is the high peak of Savabtzi (? Sabavtzi, Merzbacher) and the glacier of the same name. In the whole 80 miles from Khan Tengri to the Kum Arik there is not a single pass which is practicable even by horsemen in single file. The river Kum Arik breaks through it by a narrow, completely impassable, ravine, with bare perpendicular sides.

To the west of the Kum Arik ravine the range receives the name of the Kok Shal, and under this name extends in a south-westerly direction

as far as the Uzun Gush peak, thence in a westerly direction to the Kogart pass, where it turns sharply to the south, ending towards the Kok Shal river with perpendicular crags. On the west, near the junction of the rivers Mudurum and Ak Sai, the range ends in a low, gently sloping ridge. The highest points of the Kok Shal are in its eastern portion; the range gets considerably lower to the westward, but in all its extent as far as the Kogart it remains a first class range, covered with eternal snow and abounding in glaciers. The northern terrace-like slopes of the range end steeply towards the valley of the Ishtyk, forming near the mouth of the Chagyr Su the narrow rocky passage called the "Ishtyk Gates" which is passable only in winter by the ice. The southern side of the Kok Shal is a long gentle slope covered with stones and boulders, and almost completely bare of trees and grass. The latter is found only in the deep ravines of the summit and its spurs.

The Kok Shal is passable only by the following five passes:— the Kaiche, Kukurtuk, Bedal, Kogart, and the Chanchuchar. The average height of these passes is about 14,000 feet. The best of them is the Bedal, on the caravan road from Prjevalsk to Utch Turfan. It is difficult, being always covered with ice. South side very steep, north less so. The remaining passes are very difficult; their northern slopes are very steep, and on the southern side the roads leading to them have been spoiled and covered with stones by order of the Chinese authorities.¹

¹ Korniloff's "Kashgaria," page 87.

From the ravine of the river Kok Shal the southern range of the Kashgar Tau range. the Thian Shan, under the name of the Kashgar Tau, runs in a southerly direction as far as the Korumduk pass, thence to the Turgat in a north-westerly direction (making sharp bends to the south and west near the Kurpe Bel and Kipchak passes), then it turns to the west and, making a bend which is convex to the south, it reaches the knot of hills at the source of the Suok (Toun) river. Various portions of this range have various local names,—Kok Kya Tau and Gulja Tau at the eastern end, Kara Teke Tau, Karma Teke Tau, and Suok Tau to the west of the Turgat pass. In the eastern part, from the Kok Shal ravine to where it bends to the north-west, many of the peaks are above the snowline; further on the range becomes considerably lower and free from snow, and only to the west of the Turgat pass, in the Kara Teke Tau, Karma Teke Tau, and Suok Tau, are snow-topped summits to be seen. To the north, between the valleys of the Ak Sai, the Chatyr Kul and the Arpa, the range throws out a number of long gentle sloping spurs, which by degrees unite with the undulating surface of the valleys named. The northern slopes of the range are fairly rich in pasturage, but completely devoid of all other vegetation. The southern slopes are steep, and the pasturage here is much poorer, but in the deep ravines of the rivers flowing from it are to be found the hill poplar and other bushes. This section of the frontier range is the most accessible of the whole Thian Shan system, because here are the greatest number and most convenient of passes, namely, the Terek and Turgat on the caravan roads from Fort Naryn to Kashgar. The Turgat pass, which is open almost the whole year round, is so gentle and accessible that after trifling labour it was made fit for wheeled traffic. The height of the pass is 12,700 feet.

The northern slopes of the Terek pass are gentle and soft, but the southern are¹ steep and rocky. For this reason fully loaded horses descend it with some difficulty. This pass (12,800 feet) is somewhat higher than the Turgat, but is also open almost the whole year, and only occasionally, after severe storms, is it closed for 3 or 4 days. The Chon Uru, Botmanak, Kara Jilga, Korumduk, Khojent, Boz Aigyr, Kurpe (Ishagart), Kipchak, Urta Su and Kizil Kur are in the same section of the frontier range; their southern slopes are steep, and they are passable only during five or six months of the year; during the remainder of the year they are closed by snow. The Kara Teke pass, on the road from Kashgar to the Turgat pass, is used in the summer months, when the Chakmak stream

¹ Korniloff's "Kashgaria," page 88. In Route No. 7, "Central Asia, towards India," this pass is described as a *good wheel road*.

is in flood and consequently difficult of passage for baggage animals. On the north side the ascent is steep and the track zigzags up to the summit. It could easily be improved. On the south it is not so steep. The road from the summit runs for about 5 miles through a narrow valley and then emerges into the more open stony bed of a river. There is water, fuel, and grazing in the upper part of the valley (*Lieutenant-Colonel Miles, 1902*). The Suok (Toun) pass on the road from the Arpa valley to the Suok valley is considerably better than the passes described above; its slopes are gentle and fairly soft, but it is open only during the two summer months of June and July. The height of the pass is 13,000 feet. This portion of the frontier range throws off towards Kashgaria several spurs, the most important of which is the Kara Teke range.

The Kara Teke range, commencing near the Korumduk pass, extends in a north-easterly direction. The Kara Teke range. almost as far as the junction of the Ak Sai and Aksu rivers, bounding on the south the valley of the former and filling with its branches the area between that river, the Aksu-Maralbashi road and the line Maralbashi-Korumduk. From the rocky summit of the range towards the valley of the Ak Sai there extends at first a short fairly steep slope, covered with pine woods, juniper and other bushes, after this broad gentle terraces with splendid meadows, and finally a very steep and rocky slope down to the river, completely bare of vegetation and intersected by narrow dark ravines. The southern slopes of the range are of a desert character, streams are very seldom met with, and the vegetation, except in a few well-watered valleys, is extremely poor and monotonous.

In the western portion of the Kara Teke, judging from the local names, there are peaks lying above the snowline. As we go to the east the range becomes lower, and by the longitude of Bedal there is not a single snow-topped peak. However, the average height of the range remains very considerable (not less than 9,000 feet) and it must therefore be recognized as a certain cover to the Aksu-Maralbashi-Kashgar road from the side of the Bedal pass. The range can be crossed by the following passes:—the Belowti (11,300 feet), Gulja Davan (11,000 feet), Kryk Boguz, Dungaret Me (8,670 feet), and Sari Bel. The two first are on the roads from Utch Turfan to Kashgar, and notwithstanding their considerable height they are very easily crossed, especially the second. The last three are on the roads from Utch Turfan to Maralbashi.

The ascent from the north up the Dungaret Me pass runs at first through a narrow ravine, with perpendicular walls about 700 feet

high and a width of from 7 to 12 yards, and afterwards by steep zigzags up a narrow valley which is bounded by low mounds. The descent to the south is at first gentle, and afterwards falls steeply along rocky slopes into a ravine which opens into a gently sloping valley. The pass is practicable for fully loaded camels. The Kryk Boguz and Sari Bel passes have not been explored.

The northern spurs of the Kara Teke consist of short rocky ridges, separated by wide valleys whose bottoms are encumbered with boulders. Their slopes towards the valley of the Ak Sai are generally steep.

The valley of this river, enclosed between the Kok Shal and the Kara Teke, in its upper part is from one to one and a half miles wide, and is covered with excellent pasturage, on which account it is the chief winter camping-ground of the Kirghiz of the Utch Turfan district, who in summer take their flocks to the upper ranges of the Kara Teke. Below the town of Safr Bai the valley widens out to about 7 or 8 miles and becomes cultivated; about 20 miles further to the east begins the fruitful oasis of Utch Turfan.

To the south, in the area between the Aksu-Maralbashi road and the line Maralbashi-Korunduk, the Kara Teke gives out some flat, but in places, rocky branches which are separated by wide, and for the most part, desert valleys. One of these branches, which separates from the Kara Teke near Korunduk, extends far to the east, under the name of the Chil Tagh. It rises in its central portion and then rapidly falls, ending in low steep ridges near Kalpin and Tum Chuk. The Chil Tagh is desert, but abounds in beds of plumbago.

The remaining southern spurs of the main frontier range are narrow, rocky ridges which rapidly fall as they recede from the main range. The ravines separating them are in places narrow passages with perpendicular walls, whose height is from 150 to 300 feet. The slopes of these spurs are deficient in vegetation, but in the broader places of the ravines there are sometimes found poplars, vine, wild roses, and small meadows of good grass.

From the hills at the source of the Suok the frontier range, again becoming the main range in the The Alai range. hills of the southern watershed, separates into two branches, the Ferghana range to the north-west and the Alai range to the south-west.

The latter runs in a south-westerly direction as far as the Tart Kul pass, where it turns to the west towards the Ayn Tapam peak, then again to the south-west as far as the Shart Davan, where it once more turns to the west. In the section from the

Suok to the Kyz Dar pass the Alai range forms the frontier between Kashgaria and Ferghana, and from the Suok to the Shart Davan, it forms the watershed between the basins of the Syr Daria and the Kizil Su. The average height of the range is between 13,000 and 14,000 feet; its summit for the greater part of its length is above the snowline, which on the northern and north-western slopes is crossed at a height of 13,000 feet, and on the southern and south-eastern, at a height of 14,000 feet. To the south-west the range rises considerably; individual peaks are as high as from 16,000 to 18,000 feet.

The slopes of the range are not similar; the Ferghana slopes are, in their upper zone, gentle and covered with excellent pasturage, lower down they are intersected by deep ravines in which is found a rich and varied vegetation,—sabine and birch trees, woodbine and various bushes. The slopes towards Kashgaria are distinguished by their steepness and the almost complete absence of vegetation.

In its north-eastern section the Alai range throws out into the Ferghana valley a number of long high spurs, which intertwining with each other, produce at the source of the river Tar the extremely intersected and difficult locality called Alai Ku. On the Kashgarian side also the Alai range throws out some important spurs which will be described hereafter.

The passes through the main Alai range, which are deeply cut down into its summit, lie at a height of from 11,000 to 13,000 feet above the sea. Beginning from the north-east they lie in the following order: *viz.*—the Suok, Burgui, Jitym Ashu, and Kogart,—on the roads leading from Oital to the valley of the Suok; the Tuz Ashu, Kalmak Ashu, Talgui, Siedam, and Savayardin,—on the roads from Oital to the valley of the Uch Tash; and the Tart Kul and Kyz Dar,—on the roads from Oital to the river Eghin.

The passes leading into the valley of the Suok, notwithstanding their considerable height (about 13,000 feet), are convenient, especially the Suok. Their ascents and descents are gentle and the surface is soft.

Of the passes at the sources of the Uch Tash and Eghin, only the Tuz Ashu can be considered suitable for transport; the remainder have very steep ascents and descents, are covered with fragments of rocks, and their surface is very hard.

The greater number of these numerous passes are only open in summer for 3 or 4 months, during the remainder of the year they are impassable on account of snow drifts. However, even in summer, movement through them is accomplished with great difficulty. The chief obstacle is not the passes themselves, but the Alai

Ku district lying in front of them on the Ferghana side. The extremely intersected nature of this country, and especially the difficulty of crossing its numerous deep and rapid rivers, diverts caravans between Ferghana and Kashgaria to the southern roads which are more circuitous and less rich in water, fuel, and grazing. Thus these numerous passes have no importance either from a military or commercial point of view. Their importance is purely local.

The passes lying to the south of the Kyz Dar are in Russian territory. Of them the most important for the invasion of Kashgaria are the Terek, Shart, and Taldik (11,605 feet). The first of these lies on the main caravan road from Ferghana to Kashgaria, and is accessible for caravans only during three months of the year—April, May, and June—in consequence of the great rise of the water in the rivers flowing from it, and the pools of water formed under the snow on its southern slopes. On the Shart and the Taldik, which have been made into cart roads,¹ caravans can move in summer, using the then excellent pasturage of the Alai valley.

The eastern spurs of the Alai range, which fill the extreme north of the eastern corner of Kashgaria between the Russian frontier and the rivers Kizil Su and Suok, have been little explored. Reconnaissances have been made chiefly on the borders of this district; in the central part of the district there have only been two Russian reconnaissances (by Lieutenant Babushkin in 1900), from the post of Karangalik to the Suok pass by the valleys of the Uruk and Suok, and from the Talgui pass to the ruins of Mashrab by the valleys of the Akran and Kara Tal. It is consequently only possible to approximately fix the direction of the ranges by means of the position of certain passes.

The most important of the spurs of the Alai, starting from near the Kogart pass, extends at first eastward to the Jir Ui pass; forming the watershed between the rivers of that name, then under the name of the Terek Tau or Koktan, it bends to the south and near the sources of the rivers Kan Su² and Uksalir it, in its turn, throws out several branches. The highest and longest of these, under the name of the Uruk Tau, extends to the east and south-east, separating the valleys of the Suok and Uruk. North of Min Gol this range

¹ On the Russian 1889 map the road *via* the Terek pass is shown as a cart road; on their 1894-95 map it is shown as a bridle path, and the cart road goes *via* the Taldik and Taun Muran passes.

² Shown on Curzon's map as Kan Jugar.

turns sharply to the east, and about 7 miles from Kashgar it ends in the low clay ridge of Ak Tash.

The second spur, under the name of the Kara Bokter, extends along the right bank of the Uruk almost to the Kan Jugan post. The next spur from the main range follows the left bank of the Kan Su,¹ and before reaching the Irkeshtam-Kashgar road it separates into two branches. The first, called the Kuzgun Tau, bounds on the north and east the wide basin of the Kizil Ui, which is shut in on the south-east by the Kara Bokter spur; the second, under the name of the Kizil Ui or Kan Jugan Tau, closing on the south the valleys of the Kizil Ui and Min Ui Dal, extends south of the Irkeshtam road as far as the Kapka ravine, along which the Uruk river breaks through to join the Kizil Su. The rocky heights of Mushi, lying to the south-east of Min Gol, are a prolongation of this spur. The spurs of the Koktan, between the rivers Kan Su and Uch Tash, have a general slope towards the Kizil Su, with a steep fall; it is intersected by the deep-cut valleys of the left-hand tributaries of this river, and by the narrow channels cut out by the water in the soft shaly soil. At the sources of the Uch Tash and Uksalir many of the peaks of the Koktan range are above the snow-line. As the range runs to the south-east it becomes lower, and east of the point mentioned there is apparently not a single snow-topped peak. The vegetation on the hills also becomes gradually poorer as one goes eastward. The good pasturage and *tugrak* groves, which abound in the valleys of the Uch Tash, Uksalir and Kosh Uyak on the southern slopes of the western end of the Koktan, from the Kan Su change into occasional clumps of tamarisk, thornbushes, and such like.

Of the passes in the Koktan and its branches the most important are the Akran and Sasik. The former leads from the valley of the Uch Tash to the ruins of Uksalir on the Irkeshtam-Kashgar road, the second leads from the valley of the Suok to the post of Karangalik on the same road. The Akran has steep rocky slopes and is not convenient for movement; the Sasik has a soft gentle ascent from the Suok side, and a short steep descent on the Karangalik side.²

The passes in the southern spurs of the Koktan, which are crossed by the Irkeshtam-Kashgar road, in the section Ulugchat-Kizil Ui, at an elevation of from 8,000 to 9,000 feet, are very slightly raised above the surrounding locality, and have gentle slopes with a soft clay surface. Consequently as obstacles they are

¹ Shown on Curzon's map as Kan Jugan.

² Authority Lieutenant Babushkin.

insignificant ; vastly more difficult are the steep and long descents into the valleys of the rivers which have to be crossed.

Between the Siedam and Kyz Dar passes the Alai throws out in a south-westerly direction some narrow precipitous ridges which cover the approach to Ulugchat from the side of the passes of the eastern Alai. On the southern lower end of one of these lie the Akin and Suvankul passes on the circuitous road from Eghin to Ulugchat. Both passes have soft and gentle slopes, and they enable one to avoid the crossings of the Kizil Su between these two places, which are very difficult when the river is full.

The next branch of the Alai, starting near the Kyz Dar pass, extends to the south-west, forming as far as the Kara Bel pass the frontier between Ferghana and Kashgaria and the watershed between the rivers Kok Su and Eghin (? Kara Terek) which are tributaries of the Kizil Su. The average height of this spur is from 9,000 to 10,000 feet. In its northern part it is wild and precipitous, but as it approaches the Kizil Su it becomes lower and less severe in its outline. Extending almost parallel to the main Alai range, this spur blocks the roads from the Beleuli (Bilyaoli) and Terek passes to the valley of the Eghin (? Kara Terek) and to Irkeshtam. Its passes lie at a height of about 10,000 feet. The most northerly of them, the Karachal and Ettik, lead from the valley of the Kok Su to the Chinese post of Eghin on the circuitous road from Irkeshtam. The two following—the Kara Bel (Sasyk Unkur) and the Ekezek lead from the same valley to Irkeshtam. The first three passes are very steep ; the roads leading through them lie in narrow precipitous ravines, and are very difficult for pack transport. The Ekezek pass (11,000 feet) on the caravan road from Osh to Kashgar, is in Russian territory and has soft gentle slopes with slight relative elevation, and consequently it could be converted into a cart road at slight expense. In the south-eastern branches of this spur there are two passes on the same road, the Karavan Kul in Russian territory, and the Kara Davan between Irkeshtam and Eghin. The former (9,500 feet) is easy, with soft clay surface ; it is quite convenient for pack transport, and could easily be made into a cart road. The latter has a rocky summit ; the ascent from Irkeshtam is easy, but the descent to the Eghin valley is steep and rocky.

A gently sloping and comparatively low spur which forms the watershed between the Alai river and the Trans Alai range. The Kizil Su unites the Alai range and the Trans Alai. The latter enters Kashgaria chiefly by its eastern spurs. From Mount Maltabar to Mount Kurundi it forms the frontier between Kashgaria and Ferghana. The chief range has

an average height of about 18,000 feet, with individual peaks which are as high as 23,000 feet. Its eastern spurs separate the Kizil Su from its tributary the Markan Su. It is generally a snow-covered range with very steep slopes. In Kashgarian territory there is only one road uniting the two valleys mentioned—a very difficult rocky path from the ruins of the Nagra Chaldi post on the Kizil Su, to the village of Kugrim in the Markan Su valley by the Silyusin Kya pass. In the ravines of the northern slopes are groves of firs, sabine trees, birch, poplars and various bushes; on the southern slopes, under the very crest, are excellent pastures.

The mountain system of the southern and western frontier districts of Kashgaria is extremely complicated, and up to the present there is much difference of opinion as regards its orography. On its frontier with Russia and India, the huge mountain system of the Hindu Kush meets, almost at a right angle, the Mustagh, the principal range of the second mountain system of Central Asia—the Karakoram. At the place of meeting there is an enormous knot of mountains which feeds with its glaciers the tributaries of the Oxus, the Indus, and the Tarim. From this point the Karakoram extends to the south-east towards the Lingzi Thang plains, where it unites with the high flat plains of north-western Tibet. North-north-west from the place of meeting are the Pamirs, which at their eastern end form a system of extremely low ridges extending in the same north-easterly direction as the Hindu Kush. Coming closer together, as they get to the east, the Pamir hills form a compact chain running almost due north and south, and uniting the Trans Alai range on the north with the Karakoram on the south. This range is called the Sarikol.

To the east of it lies a system of mountains with a general direction towards south-south-east, which was known to ancient Chinese geographers under the name of the Tzuen Lun or Onion Range. The Tzuen Lun gradually merges into a system running east and north-east—the Nan Shan or Southern Mountains, which bound on the north the tableland of Tibet. Comparatively recently the Tzuen Lun was considered to be an independent system of mountains running north and south. However, the latest explorations have shewn that the Tzuen Lun and the Nan Shan form one system, which extends in a gigantic bow from the sources of the Markan Su almost to the shores of the Pacific Ocean. This system, the most extensive and magnificent of all the mountain systems of Asia, has received the name of the Kuen Lun. Forming during almost the whole of its extent a very broad system, the Kuen Lun in its extreme western portion meets the Karakoram and the Pamirs, bends to the north and becomes closely united with them.

Thus on the western and southern frontiers of Kashgaria the Sarikol range, the Karakoram and the Kuen Lun form a broad mountain girdle consisting of two bows which unite at their north-western end and separate towards the north-west of Tibet.

The Sarikol Range.

From the source of the Markan Su, where the Sarikol range unites with the Trans Alai range, the line of the watershed runs to the south, bounding on the east the valley of the Great Kara Kul lake. A little to the south of the Uz Bel pass the range bends to the east towards the Ak Berdi pass, whence it again takes a southerly direction as far as the latitude of Dafdar (Dehda), where it turns to the west, and near the Wakh Jir pass, at the source of the river of the same name, it joins the Hindu Kush and Karakoram ranges. In its northern part, as far as the latitude of lake Bulun Kul, the range consists of relatively low hills with gentle slopes. From the main range are thrown out long spurs separated by wide valleys, amongst which the chief summit of the range is completely lost. The hills and valleys are covered with grass. To the south of Bulun Kul the range becomes considerably higher. Its eastern slopes, towards the valleys of Basik Kul, Little Kara Kul and Subashi, are steep. South of the Ulug Rabat pass there are high peaks, projecting sharply above the general line of the summit (Char Basin and Galankul). From the Gidjek post, on the northern entrance into the Tagharma valley, the main range has fairly broad slopes, at the foot of which extends a rocky sterile district, which the natives call "sai." South of Tash Kurghan, the Sarikol range is a high granite chain, with a very majestic appearance from the east. The average height of the range is not less than 15,000 feet and individual peaks are much higher, such as the Taldi Kul 20,722 feet, a peak at the source of the river Pistan 18,060 feet, and a peak near the Bayik pass 18,690 feet. The summit of the range is intersected by deep hollows.

In its upper zone the eastern and southern slopes of the range are very steep and almost completely bare; lower down there extends a long slope gradually falling into the valleys of the Karachukar and Taghdumbash. Vegetation is seen only in the shape of clumps of willows and juniper bushes on the banks of the rivers, in hollows, and in mountain ravines; there is pasturage on the banks of the rivers and occasionally in the upper zones of the range between the cliffs. The slopes of the foothills are generally sterile and rocky. On the Pamir side the range ends in long gentle slopes, covered with excellent pasturage. The Sarikol range, notwithstanding its considerable average height, is very accessible, especially in its northern and central parts.

There are the following passes in the Sarikol range:—

1 & 2.—The Kum Bel (13,820 feet) and the Kosh Bel (13,600 feet), in the northern extremity of the range, on the road from the valley of the Markan Su to the valley of the Kiyak Bashi.

3.—The Kara Art (16,410 feet) on the road from the valley of the Great Kara Kul to Muk Kurghan and Kashgar. This pass has soft soil and gentle slopes.

4.—The Karazak—a very high pass with gentle slopes. Thanks to the open nature of the summit and the continual winds, this pass is not closed, even in severe winter.

5, 6, & 7.—The Uz Bel (15,300 feet), Oi Balgin (15,800 feet), and Aramati passes, on the roads from the valley of the great Kara Kul and Rang Kul to the valley of the Muji. All three passes are suitable for pack transport and are accessible for laden horses and camels. Their inconvenience is the shortness of breath from which men and animals suffer in consequence of the great altitude of the locality.

8 & 9.—The Ak Berdi (15,100 feet) and Chon Kotai—on the roads from Rang Kul to Bulun Kul. Caravans going from the Great Pamir to Kashgar in winter use the Chon Kotai pass. In order to convert it into a cart road, it would only be necessary to prepare a short distance of the ascent from the western side, and about $\frac{2}{3}$ mile of the descent on the other side. The Ak Berdi is easy for laden animals on the east, but very steep on the west side.

10, 11, 12, & 13.—The Kum Jilga, Tokh Terek (15,400 feet), Jol Kok Terek, and Muzkuru, on the roads from Rang Kul to the little Kara Kul and Subashi. The Tokh Terek is easy.

14.—Sari Tash—on the road from Rang Kul to the Chinese post of Kara Su.

15.—Kulma (Kara Su)—on the road from the Pamir post to the Kara Su post; this pass is considered most accessible, and is passable almost the whole year round. In winter, trade caravans pass through it from Wakhan and Badakshan to Yarkand.

16 & 17.—Tusakchi (Kaindi) and Berdish—on the roads from the Pamir post to the Tagharma valley. Both passes are open almost all the winter. The Tusakchi pass has a steep rocky summit; yaks are necessary for the ascent of loaded caravans from Tagharma.

18, 19, 20, 21, & 22.—The Chashman, Dun Keldik, Okshirak, Neza Tash (or Shindi, called by the natives Shingan), and Khan Uli—on the roads from the Aksu valley to the Tash Kurghan and Taghdumbash valleys. The height of the Neza Tash is 14,900 feet.

In autumn, when the rivers are low, this pass is used by caravans going to Yarkand and Yangi Hissar. In summer, the pass is not convenient, because movement along the narrow rocky channel of the Shingan is extremely difficult. The other passes from the valley of the Aksu are not very accessible, and are seldom used.

23.—The Sarikoram, or Pistan pass is similar to the above, and leads from the source of the Aksu to the village of Dafdar (Dehda).

24.—The Bayik pass, on the road from Ak Tash to the valley of the Karachukar. The height of the pass is 15,078 feet. The ascent from the valley of the Aksu is so easy and convenient that it is suitable without any preparation for the movement of wheeled artillery. The descent into the valley of the Karachukar is not difficult, but is somewhat rocky; in general, the Bayik is one of the most convenient and accessible passes in the range.

West of the Bayik there are four more passes, the Tagerman Su, Kipchak, Mikhman Uli, and Kukturuk (or Kara Jilga). They are all very high and difficult.

All the above-mentioned passes of the Sarikol range are passable for horses and camels during the summer months, that is to say, from June to the end of September. The first to be covered with snow are the southern passes—the Bayik, Tagerman Su, and Mikhman Uli. On the Bayik, sometimes as early as September, snow falls to the depth of one's waist. In October the southern passes are closed, and they do not open again earlier than the end of May.

The northern passes from the Kara Art to the Ak Berdi are closed for a short time in winter, but because of their great height and consequently rarified atmosphere they are seldom used. The most convenient are the Chon Kotai, Kulma, and Berdish.

The Karakoram Range.

The Karakoram forms the south-western part of the outer bow of the Kashgarian mountain girdle. Its chief range, the high snow-covered chain of the Mustagh, extends to the south-east from the sources of the Karachukar, Hunza, and Wakh Jir rivers, forming the watershed between the basins of the upper Indus and the Raskam river (the upper waters of the Yarkand river), and at the same time the frontier of Kashgaria with Kanjut and Kashmir. In its central section (between 75° & 77° E), the Mustagh is a gigantic mass of mountains with an average height of about 20,000 feet, covered with glaciers; many of its peaks reach a height of from 24,000 to 26,000 feet. The four peaks in the Gasherbrum-

group have a height of over 26,000 feet, and peak K-2, or Depsang, reaches a height of 28,250 feet, and thus appears second only to Mount Everest in the whole world. To the east of the 77th meridian, the Mustagh, having thrown out the high snow-covered Sasar range, which forms the watershed between the Sheok and Nubra rivers, separates into several broad branches which gradually become lower and merge into the high mountain plains of north-western Tibet. Between these branches lie a series of broad, flat, and desert valleys, sloping gently towards the north-west, the Chang Chenmo, Lingzi Thang, Aksai Chin, and Ak Tagh. The absolute height of these valleys lies between 17,100 and 17,300 feet. Towards Kashgaria the Mustagh throws out several spurs. At the source of the Mustagh there starts in a north-westerly direction the Aghil range, which extends for about 130 miles along the right bank of the Mus ag , a tributary of the Raskam river. Its height is little less than that of the main range. Near its point of junction with the main range the Aghil Tagh has some enormous glaciers and almost perpendicular peaks, with a height of about 24,000 feet. It is utterly devoid of vegetation, other than grass. It is crossed by the Aghil pass (15,300 feet) which is remarkably easy. Near Mount Goodwin Austen, the Mustagh throws out several spurs which fill the area between the Raskam river and its left-hand tributaries. To the east of the Karakoram pass the Mustagh unites by one of its spurs, with a southern spur of the Kuen Lun range. The northern slopes of the Karakoram are steep, and in their upper zone completely bare. In their central zone, at the bottom of the lateral valleys, are seen small patches of grass and clumps of small bushes. In the lowest parts of these valleys, near their exit into the Raskam valley, some grass is to be found and there are extensive groves of bushes and poplars, and in some of them there are apricot trees.

Towards Ladak and Baltistan the Karakoram throws out a number of high snow-covered spurs. The most important of these is the Sasar, which starts in a south-easterly direction from the source of the Nubra river, and crosses the most important caravan routes from Kashgaria to Leh.

The southern slopes of the Karakoram are long and steep ; their valleys differ from those of the northern slopes by their greater abundance and variety of vegetation ; at the heads of the valleys are excellent pasturages, and the lower valleys of the Nubra and Sheok are covered with flourishing villages, gardens, and cultivated fields.

The Karakoram lies across the roads from Kashgaria to Kashmir and Kanjut. The roads into Kanjut cross the watershed of the

Karakoram by six passes,—the Kilik (15,600 feet), Gul Khwaja Uwin, Mintaka (15,400 feet), Karachenai, Khunjerab (15,420 feet), and Shimshal. The first five lead from the Karachukar valley to the Kanjut valley. From the beginning of November to the beginning of April, and in some years even to the middle of May, these passes, which are about 15,000 feet high, are covered with deep snow; in winter communication between Sarikol and Kanjut is carried on, only by men on foot, through the Mintaka pass. During the remainder of the year the passes are free from snow and can be crossed by horses and camels. During the summer, movement across them is accomplished with great difficulty on account of the great rise of water in the rivers flowing from them, and consequently they are most accessible in the autumn before the snow falls. The Kilik is an easy pass with a gradual ascent. In summer it is the easiest pass towards Hunza, but in spring, autumn and winter the Mintaka pass is preferred. The Gul Khwaja Uwin is more difficult than either the Kilik or the Mintaka, and is now never used. The Mintaka has a steep ascent and descent near the top. The top is bad going over boulders. It is practicable for yaks, but not for laden ponies. The Karach nai is steepish and difficult on the north, but easy on the south. The Khunjerab is easy near the top, but a few miles down on the Hunza side it becomes narrow, stony and difficult. The Shimshal, or Shingshal pass, presents no difficulties in itself, but some ten miles on the Hunza side the road becomes exceedingly difficult and quite impracticable for laden animals. It is 14,719 feet high, and leads from the Raskam valley to the Kanjut valley.

On the roads from Kashgaria to Baltistan and Ladak are the passes of Mustagh, Chorbut, and Karakoram.

The Mustagh pass leads from the valley of the Raskam (near its junction with the Bazar Dara), to the town of Skardu in Baltistan. Its height is 19,000 feet. The road across the pass, for a considerable distance along an enormous glacier and is very dangerous. Formerly it was occasionally used by the Ladakis when returning from Yarkand. At present it is impassable, probably on account of the movement of the glaciers, and the appearance of cracks in their surface.

The Chorbut pass, leading from the valley of the Khafaliang to the valley of the Nubra, is at present impracticable. Formerly the Ladak merchants occasionally used it for laden coolies, it being impassable for laden animals. Its height is 19,000 feet. Route 41, "Kashmir and Ladak," gives the height as 16,700 feet, and states that traffic generally goes by this route in summer.

The Karakoram pass lies on the most important road from Kashgaria to Leh, the chief town of Ladak. On the northern side there is a steep descent for 500 feet, compassed by a zigzag track on rocky debris of the consistency of gravel. The approach from the south is long and gradual, until close up to the pass there is a sudden ascent of 300 or 400 feet up a narrow tortuous track. Notwithstanding its considerable elevation—18,317 feet—this pass is easier than those lying north and south of it on the same road,—the Kilian and Sasar passes,—its slopes are gentle, there are no glaciers, and in summer it is free from snow. It is nearly always open, and is passable for laden horses throughout.

In the eastern branches of the Karakoram are the Kara Tagh, Compass La, Pangtung, Changlung Barma, and Changlung Yokma passes, which are crossed by the eastern roads from Shahidulla to Leh. These passes are easily accessible, have gentle slopes and no glaciers, although their height is from 17,500 to 19,000 feet. They are, however, little used in consequence of their enormous height, low temperature, and the lack of pasture and water in their valleys. In the Sasar, a southern spur of the Karakoram, are the high and very difficult passes of Sasar (17,500 feet) and Karaul Davan (17,000 feet), which have steep rocky slopes covered with glaciers.

The Kuen Lun Range.

The Kuen Lun, which forms the internal bow of the Kashgarian mountain girdle, in its whole enormous extent from the Pamirs to the shores of the Pacific Ocean presents very few differences in its ground plan. The western section, from the source of the Markan Su to the latitude of Polu, is an uninterrupted snow-covered range, with a broad belt of lateral ridges. The main range extends first from north-north-west to south-south-east, and afterwards to the south-east; the lateral spurs run in very varied directions, but the most of them are perpendicular to the main range. The breadth of the system at the longitude of Yarkand is 130 miles. To the east of Polu the Kuen Lun runs from south-west to north-east and keeps in this direction as far as the meridian of Lob Nor. In this section the Kuen Lun does not consist of a single range with foothills, but of several ranges, separated by narrow longitudinal valleys. There is, however, only one snow-covered range. At the narrowest part, opposite Nia, the Kuen Lun consists of several narrow ranges, rising to a height of from 13,000 to 24,000 feet, and very steep towards the south, on the Tibetan side.

To the east of the exit of the Cherchen river the Kuen Lun consists of several separate ranges, parallel or divergent, and for

the most part snow-covered, whose ends hide one behind the other. The direction of the range changes from north-east round to south-east as we go to the east, and this direction is maintained as far as the eastern limits of Kashgaria.

Thus, as regards its ground plan, the Kuen Lun system can be divided into three sections,—the Western Kuen Lun as far as the meridian of Polu, the central to the latitude of Lob Nor, and the eastern in the districts of Tsaidam, Koko Nor, and internal China.

The western and eastern ends of the Kuen Lun are characterised by the south-easterly trend of their ranges, and the central by its north-easterly; at the points of junction the range runs east and west. Consequently the Kuen Lun forms in Kashgaria two enormous bows, with their convex sides in opposite directions; it is widely extended at the outer ends of the bows, and narrow at the end which is common to both. For the purpose of the present report, we have only to consider the Western and Central Kuen Lun, as the Eastern section lies almost entirely outside the limits of Kashgaria.

In the north-western portion of the Western Kuen Lun, which lies to the north of the Yarkand river
 The Western Kuen Lun. after the latter bends to the east, it has received the name of the Kashgarian mountains.

The chief part of the Kashgarian mountains is the magnificent group of the Muztagh Ata, which is
 The Kashgarian Mountains. divided into two parts by the deep ravines of the Ike Bel Su. The southern of the two chief peaks, called the Muztagh Ata or Tagharma, has a height of 24,000 feet, and is covered with glaciers. The latter are widely distributed on its south-western slopes, especially where they exceed the height of 13,000 feet. In the northern part of the range there are the Charkum (or Mount Dufferin, or Shevakti), and the Kichik Muztagh Ata (or Konur Tube, or Mount Kungur), which according to Deasy, has a height of 23,530 feet. In the southern spur of the Muztagh Ata is the Tegermen peak, whose height is not less than 22,000 to 23,000 feet. Thus the whole group of the Muztagh Ata between the Gez defile and the Tash Kurghan river is one enormous precipitous mass, composed of gneiss and micaceous shist, very steep towards the east and west. The average height of the group is not less than 20,000 feet.

The north-western prolongation of this group is a high snow-covered chain, which under the various local names of Kara Bokter, Buri Kuz, Ulug Art, and Keng Tau, extends to Muk Kurghan, where it unites with the spurs of the Trans Alai and Sarikol ranges. As it recedes from the Gez defile it becomes considerably lower; the Ulug Art pass lies at a height of 16,890

feet, and the Ayak Art at a height of 12,215 feet. The narrow precipitous summit of the range forms a line with a few irregular breaks. On the south west, towards the Muji and Kiyak Bashi rivers, the range slopes down steeply without forming any spurs; on the north-west it throws out a number of long rocky spurs. The most northerly of these, the high snow-covered Kazigart, runs parallel to the Markan Su and the Kashgarian Kizil Su until the junction of the latter with the Ayak Art; along the right bank of the latter runs the Chimgan Tau spur which ends in a low ridge near the village of Ak Tash. To the south, along the left bank of the Gez river, extends the high rocky chain called Bektargak or Ala Archa, whose highest peaks are the Jak, Tanimas, and Boz Unkur. Along the right bank of the Gez is the high, and at first snow-covered chain, called Yalpak Tash, Kul Yailak or Kupruk Tagh, which reaches its greatest height in the peaks of Yalpak Tash and Igar Tash. This chain forms the watershed between the rivers Gez and Kara Tash.

From the central group of the Muztagh Ata there extends to the east, towards the village of Yakka Arik, the Uzun Kir range which forms the watershed between the rivers Kara Tash, Kinkol, Chimgan, and Urteng Tuz, which flow toward the north-east, and the Chaarlun and Pas Raba which are left-hand tributaries of the Yarkand river. On the north-east and south-east the Uzun Kir throws out a number of long steep spurs which are separated by the valleys of the rivers named above. The branches of the Uzun Kir, which is called in its eastern part the Kizil Tagh, end before reaching the Yarkand—Yangi Hissar road; only the most northerly of the spurs, which crosses the road by the low but rocky Kairak ridge, unites with the clay hills to the east of the road.

The chief range of the Western Kuen Lun in the Kashgarian hills is the Sari Kir, which starting from the chief summit of the Muztagh Ata, extends to the south-east between the Shindi and Pas Rabat rivers. West of the Sari Kir runs the Darshat range (with the Tegermen peak) the southern continuation of which, the Aphrosiab or Julian hills, joins the Muztagh Ata to the Mustagh, the chief range of the Karakoram. All the numerous spurs of the Muztagh Ata have practically the same characteristics. At their eastern end in the Uzun Kir, Sari Kir, and Darshat ranges, they have an average height of about 15,000 feet, above which individual peaks rise to a height of over 20,000 feet. As we go to the east and north-east the hills become lower, ending in small ridges in the neighbourhood of the Yarkand—Yangi Hissar road. All the hills have steep rocky summits; below the wild broken rocks of the summit extend "yailaki"—broad flat terraces,—which in spring and early summer are covered with excellent pasturage;

still lower there are again rocky precipices intersected by gullies and lateral ravines. As we go to the east the terraces become narrower and disappear, changing into sterile rocks.

The valleys of these hills in their upper portions are wild dark ravines, in which are occasionally seen birches, sabine trees, and small bushes; to the east the valleys widen considerably and become richer in vegetation. In the more open places are found clumps of poplars, willows, honeysuckle, and occasional small turf-covered areas suitable for cultivation.

Notwithstanding the considerable height of the ranges and the steepness of their slopes the Kashgarian mountains are remarkable for their great accessibility compared with the other parts of the Kuen Lun range. They are passable for pack transport by several roads leading from Bulun Kul to Kashgar. The best of these is the road through the Gez defile which runs through the whole width of the hills. On this road, if we except a few crossings over jutting spurs, there is not a single pass, but unfortunately, movement by it in summer is very difficult in consequence of the rapidity and great depths of the Gez river.

The following are the most important passes in the Kashgarian mountains:—

1.—In the north-western part of these hills are the Ayak Art, Min Teke, Kazigart, Ulug Art, and Buri Kuz passes.

The Ayak Art (12,200 feet) is on the road from the Pamirs to Kashgar by Muk Kurghan and Upal. This pass is open all the year round, and is very convenient for pack transport, but in summer it is not used, because at that season the crossings over the Markan Su, which flows to the westwards of it, are very dangerous.

The Ulug Art, on the road from the valley of the Muji to Upal, is open only for two months—from the middle of June to the middle of August—and then only in the most favourable years; the height of the pass is 17,000 feet. The surface is rocky and the steepness of the slopes is considerable, in places as much as 35° . This pass is used at the time of high water in the Gez river.

The Min Teke and Kazigart are on very difficult tracks known only by the local Kirghiz.

2.—The Kara Tash and Ghijak passes are on the road from the valley of the Little Kara Kul to the town of Yangi Hissar. The Kara Tash, which lies in the central and lower part of the Muztagh Ata, is open for a short time in the middle of summer; its height (16,500 feet) and the steepness of its slopes make it one of the most difficult passes in the Kashgarian hills. The ascent from the side of Kara Kul is especially difficult, being covered with rubbish and fragments of rocks.

The Ghijak (13,190 feet) has a soft surface, but it is very steep—in places as much as 50°. For the carriage of loads yaks are necessary.

3.—The Kok Mainak (15,635 feet), Yangi Davan (15,990 feet), Yam Bulak, Chichiklik (or Sari Tash Mainak) (about 15,000 feet), Terart (Torat) (13,330 feet), Kashka Su (13,023 feet), Kara (9,590 feet), and Kizil (10,480 feet) passes, in the Darshat, Sari Kir, and Uzun Kir ranges, are on the roads from Tash Kurghan to Yarkand and Yangi Hissar.

The first two passes, notwithstanding their considerable height, are fairly convenient for pack transport; their slopes are soft and not very steep. They open in the end of May and do not close before the end of September. These passes are used when the road from Tash Kurghan by the Shindi and Tangi defiles is impassable on account of the depth of the water. The Kok Mainak is easy on the east, but difficult for ponies on the west. To the north of the Kok Mainak is the Yam Bulak pass. The going here is good, except on the pass itself, which is very difficult for laden ponies, as the track crosses a mass of boulders. It is seldom used owing to its greater length and difficulty. The Chichiklik pass has a gradual ascent on the east, a level snowy stretch on top, and a rough stony descent on the west side.

The remaining passes of this group are open almost the whole year round.

The Terart (Torat) has a narrow rocky summit; the western slopes of the pass are in places steep and rocky; the eastern are gentle and covered with grass.

On the Kashka Su the southern slope is a fairly serious obstacle, as in places there are steep zigzags and narrow gullies. The summit of the Kashka Su is rounded, and the northern slope is a terrace with soft grassy surface; there is a steep drop only at the end, at the descent into the valley of the Kinkol river.

The ascent to the Kara pass from the Tash Kurghan side is by zigzags over a narrow summit, between two deep ravines. The descent from the pass is gentle, and the surface soft. The Kizil pass, on the contrary, has a gentle and soft ascent, and a fairly steep descent towards Yarkand, but on the whole neither pass is a serious obstacle for pack transport.

South-west of the Kashgarian hills the ground plan of the Kuen Lun is even more intricate. In prolongation of the Darshat range, to the south from the ravine of the Tash Kurghan river, is the Aphrosiab range, which under various local names—Torteich, Julian, Muz Maidan, Tagash, etc., extends to the south-west to

the knot of hills near the Oprang pass, where this range joins, as has been said before, the main chain of the Karakoram. With the Sarikol range it forms the Tash Kurghan, and Taghdumbash valleys, and with the eastern ranges, Khandar and Chon Kir, it forms the Vacha and Middle Raskam valleys.

As far as the Kheranish pass, the Aphrosiab hills are a wide range with an average height of about 12,000 feet. In their upper zone there are several low flat summits separated by broad and quite sterile valleys; lower down are wide terraces, which in early spring are covered with rich grass. Towards the Tash Kurghan and Vacha valleys the range ends with steep slopes intersected by deep ravines.

To the south of the Kheranish, the range rises considerably, many of its peaks being above the snowline; in places there are glaciers, which at the sources of the Ili Su and Oprang are of enormous dimensions. Its rocky summit is here sharper and forms a broken line with sharp bends. As regards height, the range becomes lower at the sources of the Vacha and Taghdumbash, and at the same time its eastern and western slopes become more gentle, forming terraces with excellent pasturage.

The Sari Kir, the chief range of the Western Kuen Lun, is prolonged to the south of the Tash Kurghan river by the high precipitous Khandar or Tangi Kul range, which from the mouth of the Vacha extends to the south-east towards the village of Sanlagshi, forming the watershed between the Vacha and Raskam rivers. The average height of the range is very considerable, since the passes across it lie at a height of not less than 16,000 feet, but it has no glaciers. The summit of the range is a sharply-ending precipitous slope of very fantastic shape. Below the summit, the western slopes of the Khandar form broad, flat, completely bare terraces with a sharp fall towards the Vacha valley. On its eastern side some short rocky spurs, separated by deep ravines, are thrown out from the range.

This range, with the Aphrosiab range, form the valley of the Vacha, one of the most fruitful valleys of the Western Kuen Lun. From the Pichanyart pass, at the head of the valley, in the col uniting the Khandar and Aphrosiab ranges, to Langar, the first Tajik village, the valley resembles a valley in the high Alps. From Langar the valley widens to $\frac{2}{3}$ mile and its height falls to 10,500 feet; Tajik villages appear, and fields of barley, willows, and little turf-covered plots. From the village of Teng Ab the valley narrows into a wild ravine with perpendicular sides cut out of conglomerate, and near the village of Torbush it again widens

out to 500 yards, keeping this breadth to the village of Baldir ; here again appear villages, barley fields, meadows, willows, and in places thick groves of hawthorn and white vines. At Baldir, near the mouth of the Vacha, at a height of 9,000 feet, the inhabitants sow barley, peas, wheat and mustard. Barley gives an eightfold crop, wheat six to sevenfold. The yield of the latter, according to the local inhabitants, has considerably decreased since the earthquake of 1894 ; the soil has become more brackish and considerably damper. Experimental sowings were made of maize and various melons ; the results were completely satisfactory, but the want of available ground and the danger of early frosts led to the cultivation of these vegetables being dropped. In Baldir some years ago there were even apricot trees, but they have now been cut down in consequence of an outbreak of some sort of disease among the trees.

In the valleys of the eastern slope of the Khandar, which are at a lower elevation than the valley of the Vacha, small groves of birch, willow, wild rose, and juniper are frequently met with ; in the fields wheat, barley, peas, and melons, and in the gardens of the villages—apricots, walnuts, and apples grow freely.

Communication between the Vacha and Tash Kurghan valleys is carried on by the Sekrik (Khar Khyr), Ugariat, and Kheranish passes, with the valley of the Mariong by the Pichanyart and Thung (Thungal) passes and with the valley of the Raskam by the passes over the Khandar range—the Yamantars, Bulakin and Khandar passes. The last three passes have steep slopes and a precipitous summit. From November to the end of May they are covered with deep snow and consequently the passage is only feasible with the assistance of yaks. The Thung pass (14,000 feet) is easy on the north ; on the south side it is steep, but practicable for laden animals.

On the right bank of the Yarkand river, south of its sharp bend to the east, the Western Kuen Lun range. consists of three chief ranges, which extending at first in a southerly, and afterwards in a south-easterly direction, unite in a knot of hills lying a little to the east of the Kukalung pass. The western of these ranges, the Galioh, running along the right bank of the Raskam river, appears to be a direct continuation of the Khandar range. In its northern part, between the valleys of the Kulan Urgi and the Pil, it is a high rocky mass with an average elevation of 14,000 feet ; further to the south it rapidly rises above the snowline, individual summits being almost 20,000 feet high. The step-like terraces which are well marked in the Khandar are still more sharply defined in the Galioh range. Below the sharp rocky summit, which is

bounded by a wall-like slope of 40° , and which in summer is quite free from snow (although the snow begins to lie lower, at a height of 16,000 feet), there extends a row of broad, flat terraces, covered with enormous boulders and which fall away steeply towards the Raskam and Kulan Urgi rivers.

Of a similar nature are the slopes of the Takhta Kuram, the second main range, which lies a little to the east, and forms the watershed between the Kulan Urgi and the basin of the Tiznaf. Beginning at Kosarab the Takhta Kuram extends southwards, and in its northern part has a height of about 12,000 feet; further on it rises rapidly and at the source of the Chop it is much higher and more magnificent than the Galioh. Its passes are at a height of not less than 17,000 feet and some of its summits reach a height of 20,000 feet.

From the knot of hills near the Kukalung pass, where both these ranges unite, the main range of the Western Kuen Lun extends in a single, high, snow-covered mass eastwards towards the Yangi Davan pass, separating the basin of the Tiznaf from the right-hand tributaries of the Raskam. The average height of this inaccessible ridge is more than 17,000 feet, considerably above the height of the snowline in the Western Kuen Lun.

East of the Yangi Davan the Kuen Lun system consists of three ranges, almost parallel and equally deserving the title of the chief range. The southern extends to Shahidulla, and further to the east along the right bank of the Kara Kash to Lake Achik Kul, where it merges into the highland plains of North-Western Tibet.

The Kharangu Tagh, which fills the area between the Kara Kash and Yurung Kash rivers, is a precipitous and impassable mass. The summits of the ranges have an elevation of about 20,000 feet. It was explored by Mr. M. A. Stein in 1900. To the north of these hills is the Kilian range, which starts from the same knot of hills near the Yangi Davan and extends in a north-easterly direction along the left bank of the Kara Kash, ending in the Dua hills near Khotan.

On the right bank of the Yurung Kash, parallel to the Kharangu Tagh, there extends to the east, towards the source of the river Keria, the high snow-covered Kara Tash Tagh, which the road from Polu to Ladak crosses by the At To, (Gubolik or Subash) pass. Somewhat to the east of this pass the Kara Tash Tagh unites with the Keria Mountains, the eastern branches of the Kharangu Tagh. Here lies the flat hill valley of Gubolik which is covered by small brackish lakes and beds of sulphur.

North of the western end of the Kara Tash Tagh lie the parallel ranges Tekelik Tagh and Anasvai Tagh, which are separated by the broad valleys of the Pishe and Buya Su and which fill the area between the rivers Yurung Kash and Kara Tash (or Chira).

As the Kuen Lun system gets eastward it becomes narrower, and at the meridian of Polu it consists of only two ranges which are close to one another.

All the mountain chains described above are snow-covered ranges, whose height increases as we go to the east. In the mountainous mass between the Kukalung and Yangi passes there are peaks with a height of 23,000 feet, and at the sources of the Yurung Kash and Keria rivers in the eastern part of the Kharangu Tagh and Kara Tash Tagh most of the peaks reach a height of 20,000 feet. The average height of the passes in this portion of the Kuen Lun is between 17,000 and 18,000 feet. Thus there is little difference between the heights of the peaks and the passes, and consequently the main range of the Kuen Lun here resembles mighty waves, bounding from the south the valleys of Kashgaria.

The southern foot of the Kuen Lun is marked by the deep longitudinal valleys of the rivers Raskam, Kara Kash, and Yurung Kash. The southern ends of the range break off towards them with short steep slopes intersected by the mountain torrents rushing down from the glaciers on this side. The northern slopes of the range are much more gentle and the difference between the elevation of the summit and the foot of the range is considerably less on this side. Towards the Kashgarian plains it throws out numerous long spurs which form a broad hilly country, of a very complicated nature, to the west of the meridian of Yarkand. Here the Takhta Kuram gives out numerous spurs, filling the basin of the Tiznaf. The hills of the Tiznaf basin are distinguished by the extreme variety of the lengths of their ranges, their great number, their sharp summits and their steep sides. In most cases the hills are called after the names of the neighbouring passes and villages, or the streams flowing from them.

At the sources of the Tiznaf and its tributaries the hills have almost the same height as the main range of the Kuen Lun; as the distance from the main range increases the hills become lower, ending near the oases of the plains in rows of low sandy mounds. The valleys lying between them, generally in a perpendicular direction to the range, are deep, winding, and steep. At their heads they branch out into a number of still narrower and deeper ravines and gullies with perpendicular sides.

Owing to the nature of the ranges and valleys, the hills of the Tiznaf basin are very inaccessible, and present a locality very

interesting as regards the inhabitants, who have preserved in their language and manner of life many aboriginal features.

East of the meridian of Yarkand the spurs project perpendicularly from the main range and are separated by deep valleys. Gradually decreasing in height towards the north, they end near the Yarkand-Khotan road in broad plateaus studded with separate ridges of conglomerate and mounds of loess, between which are wide stone-strewn plains. Between Khotan and Polu the hills for a considerable distance do not reach the Khotan-Keria road. From the foothills almost up to the road stretch sterile plains.

The southern side of the Kuen Lun has wild and generally bare slopes. On the northern slopes the vegetation is considerably richer. In the upper zones, below the precipitous summit and the snow girdle (at a height of from 9,500 to 12,500 feet), are luxuriant alpine meadows which are specially rich in the basin of the Tiznaf. In these hills below the alpine meadows, in the deep ravines sheltered from the sun, are found groves of pine trees, junipers, rose bushes, honeysuckle, mountain ash, and willow; on the more open spots in the bottom of the valley grow barberries, lucerne, clematis, and sweet willow; then appear fields of barley, and at the exits of the valleys are inhabited villages, fields and gardens. In the mouths of the Tiznaf, Kilian, Sanju, Khotan, and Keria rivers there has long been cultivation and inhabited villages.

The locality which is the most intersected, and most difficult of access in the mountains of the Western Kuen Lun is, as we have seen, the basin of the Tiznaf. All the roads crossing this area serve only for communication between the inhabitants of the neighbouring valleys, and are extremely difficult.

The most important passes on the roads from Kashgaria to Ladak are in the extreme eastern section of the Western Kuen Lun between the Kukalung and At To passes, and consist of:—

1.—The Kukalung pass (15,350 feet) in the southern main range, on the road from Karghalik to the valley of the Raskam. The ascent from the north, out of the valley of the Kulian Arik, runs through a steep rocky defile. On the summit of the pass is a glacier which feeds the Malgum Bashi, a tributary of the Bazar Dara. The descent into the valley of the Raskam is also steep and rocky. Grombchevski, who crossed it in November 1889 describes it as "smooth, sloping and not difficult." Deasy—December 1897—says it is "not difficult when free from ice."

2.—The Takhta Kuram (17,714 feet) on the same road in the Takhta Kuram range. The ascent at first is on a soft clay soil, which at the height of 14,000 feet changes to rocky debris; after

this come broad flats covered with large boulders. The sharp rocky summit of the pass consists of loose granite with a slope of 40° , below which is a gentle descent to the Kulian Arik. In summer, in consequence of the steep and open nature of the summit, the pass is free from snow.

3.—The Chiragh Saldi (13,022 feet), leads from Mazar Khoja to the Raskam valley, over the southern end of the Takhta Kuram range. It is fairly easy.

4.—The Yangi Davan (15,800 feet) in the same range is on the winter caravan road from Kashgaria to Ladak. The road up to the pass, although steep, is well constructed, and is suitable for lightly laden camels. The descent into the valley of the Raskam runs at first through a gently sloping valley, then through a wide ravine with a soft surface, and finally along the steep rocky bed of a river in a narrow defile. There are no glaciers. This pass is open for three months in the year, from August to November.

5.—The Ishak Art is a steep and rocky pass in one of the northern spurs of the Takhta Kuram, on the road from Kugiar to Bazar Dara in the Raskam valley. Owing to the great steepness of the eastern slope, horses have to be lowered down by ropes in two places. The height of the pass is about 12,500 feet.

6.—The Ak Koram or Tupa pass (10,335 feet) is on a spur of the main range, on the winter road to Ladak. The ascent on the north is gentle and soft, but near the summit it is steep. The descent on the south is at first easy and soft, then the road goes along a narrow ravine which is encumbered with debris of white chalk,—hence the name of the pass. The pass is open all the year round.

7.—The Kilik pass (17,500 feet) is in the Kilian range on the road from Kugiar to Shahidulla. The pass is steep, rocky and difficult of access, especially in summer, in consequence of the rapid current and great rise of water in the river Togra Su.

8.—The Kilian pass (17,123 feet), in the same range, is on the chief summer caravan route from Kashgaria to Ladak. It is very difficult and steep. Laden ponies can only cross with difficulty. This pass is generally used in summer, as the rise of water in the river Kilian Su is not very high.

9.—The Sanju pass (16,650 feet) is in the same range, on the road from Khotan to Shahidulla. This pass, although lower than the Kilian, is one of the most serious obstacles on the roads from Kashgaria to Ladak. The ascent from the Khotan side is at first fairly gentle and soft, but the last third is very steep, rocky and often encumbered by avalanches. On the summit of the Sanju are glaciers. The descent is at first down a steep slope covered with ice and stones. At the bottom of the descent is the narrow, rocky, Tar Boguz gully.

The pass is hardly ever free from snow, and is difficult for laden horses, yaks are generally employed. The Sanju pass is used only in summer.

10.—The Sokh Bulak pass (16,165 feet) is on the southern spur of the Kuen Lun which unites it with the Karakoram. Across this pass runs the road from Shahidulla to the Raskam valley. On the east it is gradual and easy, on the west very steep for 600 yards, surface stony, and going difficult.

11.—The Suget pass (17,610 feet) on the same spur is on the summer caravan road to Ladak. The northern side of the pass is fairly steep, the southern gradually merges into the broad Aktagh valley. Snow lies on it from September to April. The pass is open for four to five months. Breathing is very difficult owing to the elevation. Yaks are better than horses for the ascent owing to the height of the pass.

12.—The Kavak or Pur Tash (16,562 feet) is on the same spur, on the road from Khotan to Ladak (*via* the Hindutagh pass). This pass is similar to the Suget pass.

13.—The Hindutagh pass is in the Kharangu Tagh range, on the road from Khotan to Ladak by the defiles of the Yurung Kash and Nisa rivers. This pass, which was traversed by the traveller Shlagintvet, and calculated by him as 17,349 feet high, is accessible only by pedestrians. On its summit is a glacier which is covered with crevices and is extremely steep. Mr Stein's surveyor also crossed this pass in 1906.

The great valley of Pusha to which this pass gives access possesses extensive grazing grounds with an abundance of vegetation.

14.—The Yangi or Ilchi pass (19,092 feet), in the same range, is on the road from Khotan to Ladak *via* the Aksai Chin and Lingzi Thang. The ascent from the south is steep, and difficult when covered with snow and ice. It is only open from June to August.

15.—The Naia Khan pass (18,659 feet), on the same road is in the northern spur of the Kharangu Tagh. It is very steep on both sides, very rocky, and covered with ice. It is also open only from June to August.

16.—The Kizil pass (17,094 feet) is in the eastern prolongation of the Kharangu Tagh, on the Polu-Baba Hatun road. There is a steep climb of 1 mile on the south side of the summit. On the north there is a gradual descent for 3 miles down a winding ravine, the road is good but stony.

17.—The At To, (Gubolik or Subash) pass (16,600 feet) is in the Kara Tash Tagh. Both these passes are on the road from Kashgaria to Ladak *via* Polu, Gubolik, and Yeshil Kul. The former (No. 16) has

very gentle slopes, and is quite accessible for laden animals. The ascent to the At To by the narrow rocky defile of the Kurab (a tributary of the Keria river) is fairly gentle, but the descent is short and steep.

To the east of the exit of the Keria river, the frontier range of the Central Kuen Lun, which bounds on the south the Kashgarian valley, extends in a general direction from south-west to north-east as far as the meridian of the western end of Lob Nor, whence it turns to the east, and keeping this direction for a distance of about 249 miles, passes out of Kashgarian territory. To the south of it are other ranges whose numbers increase as we go to the east. Stretching in an easterly and south-easterly direction, they bound the row of high terraces of the Tibetan highlands which gradually become lower on the north-east towards Lob Nor. The frontier range, which at first glance is an unbroken rampart rising on the southern frontier of Kashgaria, is broken through in many places by rivers flowing from the hill valleys lying behind it, and consists of three ranges,—the Russian, Tokus Davan, and Altyn Tagh.

That portion of the frontier range lying between the Keria and the Russian Range. the Kara Muren rivers was named by Prjevalski "the Russian range." By the natives of Kashgaria it is known under the name of the Ak Kar Chakyl—which means the snow-white cliffs, or the Astyn Tagh—or lower range; this latter name was given to it in contra-distinction to the Ustun Tagh, or Upper Range, which lies behind. Between the Keria and the Bostan Tugrak rivers the Russian range is a high snow-covered mass with a sharply defined, rocky, serrated summit. Its peaks Arka Tagh (or Akka Tagh), Ak Kar Chakyl Tagh, and Ak Tagh are more than 20,000 feet high and the gigantic peak Lushi Tagh which was renamed Mount Tzar Liberator, by Prjevalski is more than 21,000 feet high. To the east of the Akka Tagh the range becomes considerably lower, its summit coming below the snowline, which here on its southern slopes lies at a height of from 18,500 to 19,000 feet; to the east of the Bostan Tugrak the snow cap disappears, or appears only in places in small patches.

The northern slopes of the Russian range between the Keria and the Bostan Tugrak are steep; below the foot of the range, which is not more than 9,500 feet above sea level, there extend foothills to a width of from 14 to 16 miles, which are covered in places by small separate ridges, intersected by narrow valleys and deep ravines. In the foothills are seen clumps of mountain pine, wormwood grows in abundance, and there is excellent pasturage. The foothills in their turn descend steeply to the sterile rocky

“sai” which extends along the Keria road. To the east of the Bostan Tugrak the range, becoming lower and broader, merges gradually into the northern foothills by low, gently sloping ridges separated by small valleys; at the same time the foothills become lower and their slope towards the adjoining “sai” becomes slighter. The south-eastern slopes of the range towards the deep valleys of the Tibetan highlands are very steep.

From the Kara Muren the frontier range, under the name The Tokus Davan Range. of the Tokus Davan, extends north-east to the Cherchen river, where it bends to the east, and under the name of the Muzluk, passes away far into the Tibetan highlands. The Tokus Davan is a narrow, snow-covered mass which slopes steeply on the north-west. Its southern slopes have so far been little explored. The northern foothills become lower as the distance from the Kara Muren increases, and between the villages of Salkynchi and Achian they have a height of 9,000 feet; at a short distance from the foot of the range the foothills end with a steep slope to the north. East of Achian, the northern slope becomes still more steep; the snow-covered Tokus Davan mountains get closer to their foothills, and the ravines perpendicular to the range become deeper, so that movement along the foot of the range becomes very difficult. The southern slopes of the range remain, as before, steep.

East of the Cherchen river, the frontier range is called the The Altyn Tagh or Astyn Astyn Tagh (Lower Range), or the Altyn Tagh. Tagh (golden range). The former is the name by which the natives speak of the range. The latter is probably a corruption caused by indistinct pronunciation of the name. Beginning from the Cherchen river with a gentle slope, the range gradually rises and at a distance of about 40 miles to the north-east of the Chuka pass there are snow-capped peaks; further to the north-east the range somewhat lowers, but at the meridian of Kara-hukar it rises rapidly, forming the high Sulan Tagh group, which consists of closely-joined, snow-covered hills and magnificent glaciers. The highest peaks of this group, according to the measurements of General Pevtzoff, have a height of 19,170 feet and the snowline on its south-western slope lies at a height of 18,500 feet. Beyond the Sulan Tagh the Altyn Tagh loses its snow cap, and bending to the east from the Tash pass, it extends into internal China under the name of the Anembar Ula and Sie Shan.

In its western part, at the road through the Chuka pass, the range has a width of about 20 miles, to the east it becomes broader, and at the meridian of Lob Nor it has a width of 26 miles. Near the summit the slopes of the range are almost

everywhere similar on both sides, but in the whole extent of the range the northern slopes are longer than the southern, which are cut off sharply towards the terraces of the Tibetan highlands lying behind them.

On the north-west the Altyn Tagh descends by terraces which in places are bounded by sharply protruding summits. Its foothills, consisting of sterile and rocky "sai," slowly descend to the lower lying desert of rocks and sand, which extends to the banks of the Cherchen and Lob Nor. Towards this plain the foothills of the Altyn Tagh fall away by short, sharply defined salients, are covered by sand drifts and separated by the deep narrow ravines of the rivers and streams which flow from the slopes of the range. In the bottoms of the ravines small groves of poplar, reeds, and various bushes are met with; in the upper zones there are occasionally seen places covered with scanty wormwood. With the exception of the Chargalik and Jakhan Sai, which starting on the southern slope break through the range in a north-easterly direction, most of the rivers flow from the northern and north-western slopes of the Altyn Tagh.

Access from the Kashgarian basin to the high upland valleys of Tibet is only possible along the ravines of the rivers which separate the main ranges, and by a few passes in them.

In the Russian range, between the rivers Keria and Tolan Khoja, there is not a single pass suitable for laden animals; in this section the range is accessible only by pedestrians, and even for them only in few places. In the central part of the range are the Urulyat and Kosh Lash passes, on the road from Karasai to the valley of the Saryk Tuz. Both passes are fairly steep, but are practicable for laden camels. From Karasai there is a bridle path, along the valley of the Bostan Tugrak to Otsky Bulak, which is quite suitable for camels. In the eastern end of the range are the passes Dalai Kurghan Art (14,400 feet), Sarykol (13,760 feet), and Pelaslyk, on the roads from Dalai Kurghan and Kopa to the pastures at the heads of the Mit and Kara Muren valleys. The first two have soft gentle slopes, covered with grass; the third has a rocky summit which is accessible for horses, but with great difficulty.

The Tokus Davan is impassable in its whole extent. In the space between it and the Altyn Tagh, along the valley of the Cherchen, there is a bridle path from Achian to Mandalyk which is passable for camels, but difficult on account of the numerous ascents over short spurs, which are separated by deep and steep ravines.

In the Altyn Tagh there are four passes—

1.—The Chuka pass (9,530 feet), in the south-western end of the range, on the road from Cherchen to Mandalyk, quite suitable for camels.

2.—The Khadalyk, about 20 miles to the east of the Chuka pass on the same road; this pass is negotiable only by horsemen in single file, and with difficulty.

3.—The Tash pass (13,000 feet) on the road from Lob Nor to Tsaidam. The ascent from the north is by short, steep zigzags along a narrow valley with a stony surface. The descent has a slope of as much as 30° and consequently the pass is only accessible for loaded animals by means of zigzags. On the northern side of the chief pass lies another, the lower but steep Kum Boen pass situated on a spur of the Altyn Tagh.

4.—The Kurghan pass (11,100 feet) on the road from Lob Nor to Tsaidam. The ascent from the north is by a narrow ravine, the descent is almost imperceptible; the pass is suitable for camels.

The Altyn Tagh is not easily accessible by the valleys of the Chargalik and Jakhan Sai because both these rivers flow through defiles with perpendicular sides. The numerous tracks in the frontier range of the Kuen Lun are used chiefly by the Tajik shepherds who spend most of the summer with their flocks on the southern slopes of the range, where there is good pasture; the tracks are also used by parties of miners going to the gold mines, which are scattered in the mountain valleys. The Tash pass is sometimes used by Mongols going on a pilgrimage to Lhassa *via* Lob Nor and Tsaidam.

Towards the western and south-western frontier of Kashgaria, between the internal and external ranges of the mountain girdle, there are a series of upland valleys which form two groups,—the Sarikol and Raskam valleys.

The Sarikol valleys, which lie between the Sarikol range and the huge Muztagh Ata, with its north-western and south-eastern spurs, extend from the Kosh Bel pass on the north to the Wakh Jir pass on the south. They are separated by the Ulug Rabat pass.

On the north there extends to the south-east from the Kosh Bel pass the broad level valley of the Kiyak Bashi which is watered by the river of that name and its tributaries. The maximum width of the valley is 10 miles. Its immediate continuation is the valley of the Muji, which has about the same breadth. Further on the name of the river changes to Tumanchi, and the valley narrows down to a little over a mile. At Tarnung Bashi, where the Tumanchi

unites with the Bulun Su and forms the Gez river, the flat level valley is at an elevation of 10,500 feet and has a width of about 3½ miles. From this point the height of the valley increases to 12,500 feet near the foot of the Ulug Rabat pass. The breadth of the valley constantly changes, varying from ¼ mile near Urta Balghun, to 2 miles south of the Subashi post. All the numerous valleys have a sandy, clay soil mixed in places with gravel; on the shores of lakes Bulun Kul and Kara Kul are small marshes. In these valleys there is a complete absence of trees, although near Uzun Tal, as appears from the name of the place, there were formerly willows, but have long since been cut down. Bushes only exist in the shape of small groves of white vine; grazing is somewhat richer; on the banks of the rivers grow reeds, grass and wormwood, and on the slopes of the hills a sort of wild grass which gives excellent grazing. The grazing is especially good in the northern valleys, Kiyak Bashi and Muji, and the lateral valleys and ravines opening into them. Agriculture, in consequence of the considerable elevation of the locality and the severity of the winter, is impossible, or, more probably, has not been attempted, as the Kirghiz who wander in these valleys employ themselves entirely in cattle-breeding. The Gez river which drains this valley is a tributary of the Kashgarian Kizil Su.

The southern valley consists of the Kara Su and Tagharma valleys and the Taghdumbash Pamir. South of the Ulug Rabat there extend at first a series of small flat basins, whose soil is for the most part sandy, which are separated from each other by low spurs from the opposite ranges. Near the post of Gidjek the valley of the Kara Su suddenly widens out into the broad Tagharma valley, which has a length of about 8 miles and a width of about 4 miles.

In the north-western part of the valley is a rocky "sai," in which small plots of fruitful ground with clumps of small reddish willow are occasionally met with; all the remainder of the valley is covered with fairly rich and varied vegetation, and small shrubs and thorn bushes of various kinds. There grows in the valley in abundance various kinds of grass which form excellent food for cattle; on the banks of the rivers are found willows and also reeds in low swampy spots. In summer the grass on the banks of the rivers and streams grows so tall that it can be mown with scythes, but according to the natives it is not so nourishing as grass from the dry hill pastures. Notwithstanding its considerable elevation (about 10,500 feet) Tagharma, sheltered by the hills from sharp rough winds, splendidly watered, and having an excellent, well-manured soil, and a temperate healthy climate, has long been inhabited.

The Tagharma valley is separated from the Tash Kurghan valley by a spur near Tangi. The width of the latter valley in its northern part, near Tash Kurghan, is about 4 miles, and its elevation is about 10,000 feet. The soil of the valley is of sandy clay, with a large mixture of gravel and boulders, which, when preparing a plot for cultivation, the inhabitants carefully remove. The banks of the river and the small islands between its numerous channels are covered with thick meadow grass. Occasionally solitary bushes of woodbine and wild rose are met with, and in Tash Kurghan and the neighbouring villages there are plantations of willow. According to the local inhabitants, there were formerly well-grown plantations of white willow, but the Chinese cut them down in the first year after their arrival in Tash Kurghan and now only an occasional tree can be seen. Since 1900 the Chinese have begun to encourage tree-planting.

South of Dafdar (Dehda) the breadth of the valley narrows down to little over a mile, it rises considerably, and at Ujadbai it consists for the most part of sterile, rocky, and in places, sandy desert. Grass and occasional small bushes are found only on the slopes of the hills, in the heads of the valleys and gullies, and occasionally on the banks of the rivers. At Ujadbai the Tagh-dumbash valley is a narrow ravine, with an elevation of 11,500 feet. South of this point the valley widens out to a little over a mile, and bending to the west, is called the Karachukar. The width and elevation of the latter increase as we go to the west. About 65 miles from Ujadbai the valley ends in the narrow and rocky Wakh Jir ravine. Well watered by the river of the same name and its numerous tributaries, the Karachukar valley abounds in excellent pasturage on the slopes of the hills, and on the banks of the rivers are found willows and small brushwood.

The settled population of the Sarikol valleys is concentrated in the central part in the Tagharma and Tash Kurghan valleys, where there are nine Tajik villages and a few small hamlets which have lately sprung up. The nomad population—Kirghiz, to the number of about 150 families—is distributed in all the valleys, but is mostly to be found in the northern valleys of Bulun Kul, Tumanchi, Muji, and Kiyak Bashi. The settled inhabitants of the Sarikol are employed in agriculture, producing wheat, barley and peas, and to a small extent in cattle-breeding; the Kirghiz are engaged only in cattle-breeding.

The Sarikol valleys, which are the only localities among the high snow-covered hills by which they are surrounded, which are suitable for settled life, and for the occupation of agriculture and cattle-breeding, are important chiefly on account of their position with

reference to the countries bordering on Kashgaria. Situated in the south-western corner of the latter, where it marches with Russia, India, and Afghanistan, these valleys contain the best and most convenient roads from Kanjut, Badakshan, and the Russian Pamirs to the chief towns of Western Kashgaria, Kashgar, Yarkand, and Yangi Hissar.

On this depends the strategic importance of the Sarikol valleys, and in particular of Tash Kurghan where the roads mentioned cross one another.

The Raskam valley, which is bounded on the south by the
The Raskam valley. Karakoram, and on the north by the main range of the Western Kuen Lun,

extends from the Sokh Bulak (Kogart) pass on the east to the mouth of the Ili Su on the west, a distance of about 100 miles. Its breadth, which near the mouth of the Kogart stream does not exceed 250 yards, gradually increases, and at the junction of the Raskam and Oprang rivers it is 4 miles wide. From the bend of the river to the north-west the valley narrows and changes into a narrow dark ravine with perpendicular sides. For almost the whole of its length the bottom of the valley is level, with a gentle slope to the west. Only at Min Tube (not far from Kulanuldi) does the valley become slightly hillocky. The river flows between high perpendicular banks, and winds from one side of the valley to the other. At the eastern end, at an elevation of 13,500 feet, it is covered with sand and small gravel. Small groves of willow and tamarisk, and little meadows with scanty pasture are occasionally seen. In these places the trade caravans generally halt on their journeys from Kashgaria to Ladak and *vice versa*. Below Bazar Dara, where the elevation does not exceed 12,000 feet, the vegetation becomes richer and more varied, and thick groves of willow, mountain poplar, tamarisk, woodbine and wild roses are found, and in the narrow side valleys there is excellent grazing. Beginning at the mouth of the Azgar river, at a height of 10,500 feet, there are fields of barley, and lower down, lucerne and wheat. Snow in the Raskam valley falls extremely rarely, and rain hardly ever. The summer is dry and sultry, and the winter is severe. Communication between Raskam and Sarikol is carried on by the Ili Su or Kurbu pass (16,750 feet), and the Oprang pass (about the same height). The former is easy on the east, but on the west it is stony, and steep near the summit. The latter on the west is an easy ascent over undulating grass land, the last $\frac{1}{4}$ mile over stony slopes, the actual pass is a narrow passage; on the east there is a gentle slope down over stones and boulders, emerging into an open grassy valley about a mile broad between high hills. For about 1 mile down the slope is easy, and then the valley gets

narrower and the road steeper. These passes are open in autumn and the end of summer.

Communication between Raskam and Kanjut is carried on by the Shimshal pass (*vide* page 28).

The mountain systems already described, which surround the Kashgarian basin, like a ring are immediately connected with each other. Completely distinct from them is the low range, or rather, hilly ridge of the Mazar Tagh, the south-eastern end of which was discovered by Prjevalski in 1885 in the course of his journey to the north from Khotan. Relying on the descriptions of natives, Prjevalski thought the Mazar Tagh to be an unbroken ridge extending to the south-east from Maralbashi towards the Khotan river. The latest explorations, however, have shown that the Mazar Tagh consists of several short ridges, completely distinct one from another, the Tumchuk and Akhur Mazar Tagh (or Oku Mazar Tagh) on the left bank of the Kashgar river, north-east of Maralbashi, the Kalap Tagh, Gumbuz Tagh and Ulug Mazar between the Kashgar and Yarkand rivers, east of Maralbashi, and the Tuzluk on the right bank of the Yarkand river. Still further to the south-east is the Mazar Tagh ridge which was seen by Prjevalski and Carey on the left bank of the Khotan river, north of its junction with the Kara Kash.

All these hills are small ridges of crystalline and clay schist with streaks of rock salt, gneiss and flint, rising not more than 500 feet above the surrounding neighbourhood. Their breadth is inconsiderable, their slopes are steep, and in places even perpendicular; their sharp serrated summits bend about capriciously. Rising like islands from the surrounding sea of sand, the ridges of the Mazar Tagh are said to be the remains of a former range which crossed diagonally the basin of Kashgaria and which has been destroyed by the erosive action of wind and water.

Within the mountain girdle, Kashgaria is a plain gently sloping from west to east. On the line Kashgar-Yarkand its elevation above the sea is about 4,000 feet (Kashgar 4,400 feet, Yarkand 3,820 feet); at the extreme east it decreases to 2,750 feet¹ at Abdall. The physical characteristics of the plain consist of sandy plains, which occupy the greatest part of its area, stretches of forest, salt plains, marshes, "sai," and oases.

DESERTS AND OASES.

The whole central portion of the Kashgarian plain is occupied by the Takla Makan desert. It is bounded on the west, north, and partly

¹ Central Asia and Tibet, by Sven Hedin, Vol. I, p. 460.

on the east by the Yarkand river, on the south by a tract of loess hillocks, which extend along, and somewhat to the north of, the Yarkand-Cherchen road, and finally by the Cherchen river from Cherchen to Lob Nor. From west to east the desert extends almost 540 miles, and its greatest breadth from north to south is nearly 240 miles. The Takla Makan is a dead land, covered with sandhills, which run north and south, and are in places as much as 300 feet above the surrounding country; in the intervals between the ridges are broad areas of a dark colour, beaten flat by the wind, covered with shingle, gravel, and occasionally small sand drifts. These areas, which are called by the natives "sai," swell out in places, forming small, very flat and gentle hillocks and ridges; on the tops of these ridges are found fairly large piles of stones which become gradually smaller from the summit of the ridges to their feet. This formation of the rocky heaps points, in the opinion of the late General Pevtzoff, "to the gradual destruction of mountains of which now there remains scarcely a trace," but some archaeologists are of opinion that the Takla Makan is the bed of an ancient sea.

Organic life in the Takla Makan desert is concentrated in the valleys of the rivers which flow through it, or disappear in it. Here are found trees, grass, and occasionally inhabitants—herdsmen leading a half-nomad kind of life. Along the valleys of these rivers run the roads which cross the desert. The most important of these is the caravan road from Aksu to Khotan by the valley of the Khotan river. In the whole of the remainder of its area the Takla Makan is completely sterile and uninhabited. The drying up of the rivers and soil, and the dessicating and destructive strength of the winds have long since extinguished all cultivation and organic life, the former extent of which is evidenced by the ruins of large towns and the remains of forests which have been buried by the sands.

The Takla Makan desert is surrounded by an almost unbroken ring of *tugrak* woods, which extend on

Forests. the north-west, north, and north-east along the valley of the Yarkand river, on the south-east along the valley of the Cherchen, and on the south along the previously mentioned tract of loess hillocks. Besides this, woods run along the banks of the rivers which cross, or disappear, in the desert,—the Khotan, Keria, and Nia rivers. The trees of Kashgaria consist of two sorts of poplar, "jida" or Babylonian willow and the small leaved willow, with an undergrowth of "oblepiki," tamarisk, "sugak," and reeds. Only on the banks of the rivers, alongside the very water itself, do the numerous species of trees and bushes form thickets sufficiently dense to form an obstacle to movement; as the distance

from the water increases the wood becomes thinner and thinner, and finally on the edge of the tract it consists only of gnarled trees, half imbedded in the sand.

In those places where the wooded tract is interrupted, the Deserts. central desert forms salients, which extend almost to the foothills of the surrounding ranges; such salients are to be found between Ak Langar and Guma on the Yarkand-Khotan road, and on the Keria-Cherchen road between Oi Tograk and Nia. Outside the girdle of *tugrak* woods, and distinct from the Takla Makan desert, are other deserts also occupying large areas; on the north, from Yaka Kuduk on the Kashgar river to the banks of the Konche river, there extends parallel to the course of the Tarim, a zone of deserts about 26 miles in breadth divided by the valleys of the left-hand tributaries of the Tarim,—the Ak Su and Shah Yar rivers; on the east, on the left bank of the Konche river, these deserts unite with those stretching along the southern foot of the Kuruk Tagh. On the west, in the triangle between the Tarim, the Kashgar river and the Kashgar-Yarkand road, are two desert areas, the Shamal Kum on the north-east of the Kashgar-Khan Arik-Lailik road, and the Ala Kum to the south-west of it. As far as the village of Tarim there extends along this road a fertile strip, about 7 to 10 miles in width, watered by the Khan Arik and Tozgun streams, but between Tarim and Qi Bag the deserts unite across the shortest road from Kashgar to Yarkand. At their western end they closely approach the great road from Kashgar to Yarkand (on the sections between Ak Rabat and Kuduk, and between Kok Rabat and Shar Makhale), in places they even cross it (near Suguchak and Karakum and between Suguluk and Seidlar). These deserts consist of unbroken ridges extending from north-north-east to south-south-west, and isolated mounds about 30 feet in height; in the intervals between the mounds are saline or clay areas, covered with reeds and thorn bushes; fairly often poplars are met, and on the tops of the mounds tamarisks.

To the east of Nia, along the southern edge of the woods, there stretches, under various local names, a belt (from 20 to 25 miles in width) of high sand dunes, which terminates on the left bank of the Cherchen river near Cherchen. Beyond this a broad belt of desert under the names of Kara Kum, Kum Katti, Chong Kum, Yaman Kum, Tugelek Sainyn Kum, etc., runs along the right bank of the Cherchen river; it is interrupted on the line Buguluk-Vash Shar by a strip of poplar forest, and then extends further to the north-east towards Lob Nor and Chargalik (the Ingr Chagaskan desert).

Finally, at the extreme east of Kashgaria, the extensive area, between the line of the Tarim (after its bend to the south), lake Lob Nor, and the Kuruk Tagh, is desert: this desert unites with the Kum Tagh desert, which, beginning on the right bank of the Jaskan Sai river, extends in a belt about 50 miles broad along the foot of the Altyn Tagh north-eastwards towards the town of Sa Chu. Besides these, small deserts are to be found on the southern and eastern shores of Lake Bagrach Kul (the Ak Bel Kum, and Shamal Gaznyn Kum), in the mountain valleys of the Kuen Lun and Sarikol, and in the intervals between the oases and salt plains of Kashgaria.

The Kashgarian plain, representing the bottom of a dried up sea, is noted for the considerable percentage of salt in its soil, and consequently saline patches are often met with, although in comparison with the deserts their area is trifling. The most important saline tracts are:—

the wide area between Suget, Kalpin, and the Suget post-house on the Yangi Hissar-Yarkand road; ¹ a similar plain between Yaka Kuduk and Chilan on the Kashgar-Aksu road; salt pans to the east of Khotan, between Khotan and Yailgan, and between Togra Gaz and Keria; and, ¹ fairly large salt pans on the Aksu-Karashar road between Sairam and Kizil, Shunut and Yakka Arik, Chul Abad and Bugur, Yangisar and Chadir.

Besides these, broad hillocky salt pans surround lake Lob Nor.

In the dry time of the year movement across the saline plains of Kashgaria presents no special difficulties, except the salt dust, which produces inflammation of the eyes. In spring, after the melting of the snows, and after heavy rain, the salt plains become so soft that movement is extremely difficult even for horsemen.

The dryness of the atmosphere, and the numerous expanses of desert do not favour the formation of swamps. Swamps, and these are found only on the banks of the rivers and large lakes, which are covered with trees, reeds, and canes, serving to retain the moisture. To the east of Maralbashi, not far from the junction of the Yarkand and Kashgar rivers, is the Lalmoi marsh, formed by the overflow of the Kashgar river. This is about 40 miles long by 8 wide and is covered with thick impenetrable reeds. Considerable stretches of swamp, covered with thick reeds and canes, extend along the banks of the

The only saline area mentioned by Lieutenant W. L. Campbell, R.G.A., who traversed this road in 1903, is that near Bugur.

Yarkand and Konche rivers in the neighbourhood of Tikkenlik and Ayrilghan, along the banks of the Cherchen below Kain Laik, along the southern shore of lake Kara Buran, and along the western shore of lake Lob Nor (Kara Koshun Kul). On the shores of lake Bagrach Kul a swamp, covered with thick reeds, and enclosing a few small lakes, occupies an area of about 66 square miles between the mouth of the Yulduz (or Khaidu Gol) and the exit of the Konche river. In the valley of the Yulduz the Burun Aral swamp covers both of its banks between its tributaries the Ak Kydyl and Saarmin. Small swamps are also to be found in the valley of the Tiznaf (near Tokuz Kupruk on the Yarkand Karghalik road), and in the northern Sarikol valleys along the rivers and lakes.

The level, rubble-covered areas, which lie at the foot of the surrounding ranges, and in places extend "Sai." far into the plain, and which, together with salt plains and deserts, separate the oases of the country from one another, are called by the natives "sai." The "sai" are of a desert character; they are covered with the products of destruction, both of atmospheric disintegration and fluvial deposits (conglomerates)—shingle, gravel, rocky fragments, and occasionally sandhills. Scanty grass is found here only in the ravines and gullies. The rivers which traverse the "sai" flow in steep ravines, deeply cut in the conglomerate mass.

As regards its topographical nature, "sai" does not present any obstacle to movement, but in the hot summer days its black surface becomes so hot that even natives, accustomed to the heat, cross it by day with great difficulty, and prefer to make their journeys during the cool night. The transition from "sai" to desert or salt plains forms "shipangi" and "shivali," and to hills, "kiri." The "shipangi" are areas with very light, friable, clay soil covered with small sand heaps and gravel. Like the "sai" they lie at the foot of the hills, and appear to be the result of the carrying away of the surface layer of the foothills by the streams of rain and snow water flowing down the slopes of the ranges.

Walking on the "shipangi" is as fatiguing as on soft sand, "Shivali" are flat basins with a saline soil, producing slender, low-growing reeds.

"Kiri" are the low, flat ridges and mounds, which are at the foot of the ranges and are probably composed of the products of the washing away of the hills.

The oases of Kashgaria are mostly situated in its foothill belt, Oases. not far from the exit of the rivers on to the plain, and a few of them, like a narrow broken ribbon, extend along the banks of its chief rivers. Distant

one from another from 7 to 13 miles, the oases amid the surrounding desert are like islands with fertile loess and sandy soil, on which shelters the whole settled agricultural population of the country, and on which its trade and manufacturing life is concentrated.

The position of the oases depends on the course of the rivers, since the existence of organic life in them is possible only on the condition of a sufficient supply of water; consequently also the size of the oases depends on the size of the rivers. On the banks of the large rivers there are large, thickly-inhabited and rich oases with towns, whilst on the banks of the small rivers and streams there are small oases containing not more than two or three villages.

Beginning from the east, the chief oases of Kashgaria are situated in the following order:—

The Karashar oasis, in the basin of Lake Bagrach Kul, is on the left bank of the Khaidu Gol river, about 17 miles above its fall into the lake, and has an area of about 17 square miles.

The Khurla oasis is situated on both banks of the Konche river at its exit from the Kuruk Tagh ravine, it extends about 8 miles along the river, and has a maximum breadth of about 4 miles. Area about 22 square miles.

The Bugur oasis is situated on the three branches of the Dinar river and is about 8 miles in length and 13 in breadth. Area about 44 square miles.

The Kuchar oasis, watered by the Kungei Koksu, is about 17 miles in length by 3 in breadth. Area about 55 square miles.

The Sairam and Bai oases are situated on the left hand tributaries of the Muzart river and have an area of about 100 square miles.

The Shah Yar oasis is small, and lies to the south of the above-mentioned oases, on the course of the same river.

The Aksu oasis and the immediately adjoining oasis of Utch Turfan occupy the middle and lower courses of the rivers Aksu and Ak Sai. The area of the two oases exceeds 700 square miles.

The Maralbashi oasis is situated on the lower course of the Kashgar Kizil Su, not far from its junction with the Tarim river. The area of this oasis, together with the small neighbouring oases of Menut and Merket, is almost 100 square miles.

The Kashgar oasis is by far the largest in Kashgaria. Situated on the middle course of the Kizil Su and on the lower courses of its chief tributaries, this oasis, with the immediately adjoining oases of Yangi Shar and Khan Arik and the separate oases of Artish, Altin

Artish, Mushi, Upal, and Tash Balik occupies an area of over 1,100 square miles.

The Yangi Hissar oasis is watered by canals from the Kinkol and Kara Tash rivers, and its area, including some small oases scattered along the Kashgar-Yarkand road and at the exits of the rivers from the defiles, is about 250 square miles.

The Yarkand oasis, one of the richest and most fertile in Kashgaria, is situated on both banks of the Yarkand river near its exit from the town ; north-east of Yarkand it extends in a narrow strip along the left bank of the river as far as Lailik. The area of the oasis is approximately 530 square miles.

The Karghalik oasis adjoins the Yarkand oasis on the south-east ; it is watered by the rivers Tiznaf and Kugiar, and including the neighbouring oases of Kugiar and Beshtarik, it occupies an area of about 180 square miles.

Further to the east, on the Khotan road, and near the exit from the hills of the river Sanju, are the oases of Guma, Sanju, Zanguya and Pialma, whose total area is about 90 square miles.

The Khotan oasis, watered by the Kara Kash and Yurung Kash, is about 45 miles in length and 20 in width, and has an area of about 450 square miles.

To the east of Khotan lie the oases of Chira, Keria, Nia, and Cherchen, with a total area of about 180 square miles.

Besides the numerous cases along the chief roads of Kashgaria, some very small oases, consisting of one or two villages or even of a dozen or so of houses, are scattered along the northern foot of the Russian and Altyn Tagh ranges. Many such small oases have recently sprung up in Southern Kashgaria between Keria and Cherchen.

Speaking roughly, the area of the whole of the oases of Kashgaria, not counting the scattered villages in the valleys of its mountain girdle, probably does not exceed 4,500 square miles, or in other words, $\frac{1}{75}$ th of its total area. It is possible that in the future this area will increase, because Kashgaria has a very considerable amount of fertile, and as yet, untouched land. In this are the loess hillocks which, in an almost unbroken ring, surround the central desert.

These hillocks were formed, partly by the atmospheric destruction of the mass of the primary loess which surrounded the desert and partly by the deposit of fine loess dust, on the edges of the *tugrak* woods and *tamarisk* groves. Piling up more and more,

the loess dust gradually buried the woods and groves, preparing soil for future generations of vegetation, and at the same time preparing for man a large supply of excellent fuel; on opening up the hillocks, produced by this piling up of dust, layers of dead roots and tree trunks separated by layers of loess are always to be found.

The breadth of the zone of hillocks is not uniform in Southern Kashgaria, between Chira and Keria it is as much as 80 miles wide. For the greater part of its extent it is covered with woods, or tamarisk groves and reeds; on its wedge-shaped projections, which point towards the hills, are situated the most important oases of Kashgaria, and new ones are springing up. The inhabitants of the newly formed settlements, by pulling down and levelling the hillocks, obtain soil which, with sufficient irrigation, yields a fabulous harvest.

The area of the hillocks, and consequently the reserve of land suitable for cultivation, which Kashgaria possesses, is unknown, and it would be difficult to ascertain it even approximately; but we may say that the value of this reserve depends directly upon the quantity of water which the country has available for the irrigation of new land.

RIVERS.

The chief river of Kashgaria is the Yarkand, or Tarim, as it is called in the lower part of its course.

The Tarim, or Yarkand river. It takes its rise in the glaciers of the Karakoram range, near the pass of the same name, at a height of about 18,000 feet. After traversing the mountain girdle of southwest Kashgaria and the whole of the plain, it is lost in the reeds and swamps of lake Lob Nor about 1,250 miles from its source. The basin of the Tarim occupies an area considerably greater than the area of Kashgaria, since many of its tributaries take their rise outside the limits of the country in the unexplored provinces of the Tibetan highlands, and in the Russian provinces of Semerechensk and Ferghana.

In its upper waters, before its junction with the river Chibra, the Yarkand, or Raskam river, as it is here called, flows almost due north, and is a rushing mountain torrent dashing down from the slopes of the Karakoram. From the Chibra to Bazar Dara it flows almost due west with a slight inclination to the north-west, and thence it keeps the latter direction to its junction with the Misgan. From the mouth of the Misgan the river turns to the north. At Kosarab it turns sharply to the east to Chumdi, and thence flows north-east as far as Karchun, where it emerges from the hills on to

the plain. From the Misgan to Kosarab the river, here called the Zarafshan, or gold-bearing river, flows in a narrow dark gorge between high hills which fall away towards it in perpendicular precipices. Below Kosarab the gorge widens, but in places the cliffs project, making any movement along the banks very difficult. From Misgan to Karchun, movement is only possible in the winter months (December to February), when the river is covered with ice. In spring and autumn movement along the banks is difficult, and during the summer high water (from June to September), it becomes quite impossible. The average breadth of the river in this section is from 80 to 95 yards, the depth at low water about 10 feet, and the velocity of the current about $1\frac{1}{2}$ feet a second; at high water the depth of water is doubled. Communication between the villages in the tributary ravines is carried on by means of ferry boats or mussack rafts.

Leaving the hills, the Yarkand river, as far as Tugarak (Igarchi), flows north-eastwards, crossing the main road from Kashgar and Yarkand to the oases of Southern Kashgaria. From Tugarak the Yarkand enters into a strip of woods which accompany it as far as Ayrilghan. The width of the wooded strip on the right bank is as much as 15 miles, and on the left bank is usually about 30 miles, but in places as much as 45 miles. From Tugarak to Menut the river flows in a northerly direction, in a single channel. On the left side, which is level and gently sloping, there are numerous sandbanks and shallows. The right bank is steep and has a height of about 7 feet. At Lailik, at low water, the breadth of the river is about 150 yards, the depth (near the right bank) is 9 feet and the velocity of the current 3 feet a second. On the left bank there extends a series of villages, through which runs the caravan road from Maralbashi to Yarkand. The right bank is desert; only opposite Lailik is there the small group of villages of the Merket oasis.

At Menut the Yarkand river bends to the north-east, and keeps this direction as far as Tippuk. Somewhat below the village of Alaigur (Ala Aigyr) the river throws off the Zaoke Su branch. The latter, after going about 33 miles in a north-easterly direction, joins the Kashgar river and is lost in the broad Laima swamp, which lies to the east of Maralbashi; they flow out of it again under the name of the Kashgar river, or Uguzilde. From the village of Yaka Kuduk, on the Kashgar-Aksu road, on the left bank of this branch, it flows another 100 miles in a north-easterly direction as far as the village of Awat, where it rejoins the main river; but it reaches the latter only at high water, in June and July; at other times of the year it dries up on the way in the woods and reeds. During the summer high water this branch has a

width of 25 yards, a depth of 3 feet, and a velocity of 2 feet a second.

The width of the main branch of the Yarkand river, after the separation from it of the above-mentioned branch, decreases to about 90 yards; the depth at low water is usually not less than 3 feet, and at high water is as much as 14 feet, with a velocity of 6 feet a second; in places there are pools with a depth of 35 feet. After its junction with the Aksu river, the Tarim again widens out to 180 yards, its depth at low water is 4 feet, and the velocity 4 feet. The river flows between steep banks raised more than 7 feet above the level of low water; along the left bank stretches a muddy strip about 300 yards broad. At high water this whole strip, and the banks in the less elevated places, are under water, the level of which rises more than 7 feet above the normal.

About 65 miles below its junction with the Aksu river, the Yarkand river divides into three large branches; the southern of these, called the Achik or Salt river, separating from the main branch near the village of Arik Aghzi, flows towards the south-east, a distance of a few days' journey, and is then lost in the sands of the neighbouring desert. According to the natives, about 25 years ago this branch was the main stream of the Tarim, but since then the Achik river has begun each year to grow smaller and smaller, and at the present time water is found in it only at the period of high water.

The second branch of the Yarkand river separates from the main stream a little above Titar Akin and rejoins it far to the eastward, near Karaul. The average breadth of this branch is about 12 yards; there is water in it only in summer.

The main stream of the Tarim flows in a north-easterly direction to Tippuk, where it bends to the east, and in general keeps this direction to Karaul. The breadth of the river at Teres (in February) is about 160 yards; at high water it is as much as 700 yards; the depth at the usual level is so small that there are horse fords in many places; but at high water, according to the natives, there is as much as 50 feet. In places, lateral branches separate from the main stream, rejoining it a short distance further on. Near Karaul the river narrows down to a width of 25 yards.

On the section from Awat to Karaul the banks of the Tarim and of both its branches are covered with poplar woods and thick undergrowth of reeds and small bushes, amongst which are occasionally met the "satmi" or huts built of reeds, of shepherds and hunters.

From Karaul the Tarim turns to the south-east and keeps this direction to Ayrilghan, a distance of 120 miles. Along the left bank of the river, between it and the Konche river, which flows

alongside it for a distance of about 25 miles, there extends a flat loess ridge, whose surface is about 50 feet above the level of the Tarim, and is covered with small hillocks, sand, and occasional tamarisks ; here and there are met withered and low-growing poplars, singly or in small clumps. In places, the ridge borders on the stream itself, projecting into it steep promontories ; in other places it is distant from the river some 7 miles, leaving broad low areas, intersected by the tributary streams and covered with small lakes, poplar groves and clumps of reeds.

The valley on the right bank of the Tarim, which is bounded by sandy hillocks, has a considerable breadth only between Karaul and Kirchin, where, along the bank, are situated 12 artificial lakes formed by the inhabitants, by means of canals, for the purpose of catching fish. Below Kirchin the sandy desert comes almost up to the river. On the section, from Karaul to Ayrilghan, the Tarim flows between low banks ; that on the left is divided up by the fairly broad tributaries (the Kok Ala Chokum river and Kumdan Tarim), which unite it with the Konche river. The breadth of the river varies between 230 and 350 yards ; the greatest depth in the pools is about 20 feet ; the velocity of the current at low water does not exceed 5 feet a second. The river often changes its course, washing away now one now the other bank, and forming vast banks of alluvial deposit. These changes, which take place very rapidly, and which are of considerable dimensions, often compel the riparian population to change their dwellings from one bank to the other.

Near Ayrilghan the Tarim, having received on its left the right-hand branch of the Konche river, makes a sharp turn to the south, and about 45 miles from this place falls into lake Kara Buran.

At Ayrilghan the width of the river does not exceed 35 yards, and at Chigalik, not far from the lake, 70 yards. The depth of the river is very considerable even at low water, and the velocity of the current is as much as 5 feet a second. Up to the ruins of the fort, which is situated about 6 miles north of Chigalik, the banks are covered with woods ; on the right bank the breadth of the strip of woods reaches 3 miles, on the left a little over 1 mile. The woods consist chiefly of poplars alternating with clumps of bushes. Here and there small meadows and clumps of reeds, and occasionally tracts completely devoid of vegetation and covered with shells, are met with. In places there are stretches of loess mounds with the stumps of dead trees. From the fort to the lake the Tarim flows through a saline valley, covered with reeds and intersected by water-channels, which the inhabitants construct for the irrigation of the fields along the banks, and from which in winter the young reeds are cut to feed

the cattle. The valley of the river in its whole extent from Ayrilghan to Chigalik is desert ; and is only visited by fishermen from Chigalik and travellers to and from Lob Nor. On both banks are bridle paths from Khurla to the lower Tarim. At Chigalik and Ayrilghan there are ferries constructed on four or five small boats.

About 16 miles to the north of Chigalik, from the present channel of the Tarim, there runs to the east the ancient channel of Shirga Chankan by which, according to local accounts, the river flowed 200 years ago to lake Uch Kul, which lay to the north of the present Lob Nor (Kara Koshun Kul), and which was connected with the latter by a channel. In the old channel of the Tarim there still exist the stumps of trees which formerly grew on the banks of the river. Having washed out a new bed for itself, the river took its course into lake Kara Buran, which in former times was completely separate from Lob Nor and was fed only by the water of the Cherchen river. At the present time Kara Buran and Lob Nor are united by the last bend of the Tarim.

The Tarim, after falling into lake Kara Buran, flows among the reed jungles of this marsh-lake along a narrow channel ; the velocity of the current is very slight.

From the Kara Buran the Tarim flows in an easterly direction, and after a winding course of about 40 miles, separates into small branches, and about 7 miles below Abdall, flows into lake Lob Nor (Kara Koshun Kul). The river flows in a trough-like channel between high banks ; its breadth is about 70 yards, and its velocity 5 feet a second. Behind its protecting banks there extends a saline plain, covered with reeds, dried-up lakes, and occasional sandhills covered with tamarisks.

The whole length of the river is about 1,200 miles. For its whole extent from its exit from the hills to Lob Nor, the Tarim is frozen over in the beginning of December, and is covered for three months with ice of a thickness of from 15 to 18 inches, along which it is possible to freely move heavily loaded wagons.

High water on different sections of the Tarim occurs at different times in consequence of its great length and the non-simultaneous melting of the snow at the sources of its principal tributaries. In the Raskam valley, the month of May can be considered as the beginning of high water ; about Yarkand high water commences early in June and reaches its maximum about the middle of that month ; near Aksak Maral it occurs in the second half of June, and in the Kara Kul district (between Karaul and Ayrilghan) only at the end of September and beginning of October. However it affects but little the level of the water in the lower Tarim, between Lob

Nor and the mouth of the Konche river. Here high water occurs much earlier, in the beginning of May, and depends on the melting of the ice-floes on the banks of the Tarim, on the opening of the lakes, and chiefly on the rise of water in the Konche river. The level of the river rises about 5 feet above the normal, and after a short time again falls; in June, with the advent of high water in the Cherchen river, there is again a slight rise of water.

The lateness of high water on the chief river of Kashgaria does not admit of the employment of all its superfluous water for the irrigation of the fields, since it does not synchronize with the time of their first watering, which usually takes place in February and March. In the Yarkand oasis this circumstance has no special influence on the development of cultivation. The considerable slope of the bed of the river, and the quantity of labour available, enabled the construction here of an extensive irrigation system, by means of which the water of the Yarkand river, immediately on the opening of the river, and notwithstanding its low level, is distributed on to the fields. The more important of the irrigation canals, the Opa, Misha, Khandya, and Zylchak on the left bank, and the Besh-Kent-Ustan and Ussa-Ustan on the right bank, resemble small rapid rivers with a width of from 20 to 35 yards, which branching in their turn form a thick network of secondary channels.

Below Yarkand the gentle fall of the river, and the considerable height of its banks, necessitate the construction of long canals to enable water to be drawn off at low water, and this presents a serious difficulty in view of the sparsity of the population, and the want of labour. During the last seven or eight years, thanks to the increase of the population, and the exertions of the late Amban of Yarkand, Liu Tajin, new irrigation canals have been constructed to the north of Yarkand near Tagarchi and Terek Langar. From the mouth of the Aksu river to Karaul there is not a single irrigation canal, and consequently the riparian population is employed chiefly in cattle-breeding and hunting.

On the lower reaches of the Tarim, in the Kara Kul and Lob Nor districts, fertile land suitable for cultivation exists only on the top of the loess ridge, on the left bank of the river, the surface of which is high above the level of the latter. For its irrigation it would be necessary to construct long channels, but in spring and summer, in consequence of the low level of the water, it would not reach fields situated on the ridge mentioned. The fields are watered only in late autumn at the time of the overflow of the river. This water in part soaks into the soil, and some remains on the surface, forming a thick frozen crust. In spring, in consequence of the thawing of the crust of the soil, which was well soaked with

water in the autumn, it receives an amount of moisture sufficient for the whole period of the growth and ripening of the corn.

Although this compensates in some degree for the lateness of the inundation, still the elevated position of the fields appears a serious obstacle to the successful development of agriculture on the lower Tarim. Agriculture here was only commenced some 30 or 40 years ago; up to that time the inhabitants of these districts were only engaged in fishing and hunting.

Thus we see that only in the neighbourhood of the Yarkand oasis does the Tarim immediately serve the needs of agriculture. But, having in view that on the middle and lower Tarim the existence of some tens of thousands of people depends entirely on the river, we can see that for a considerable part of the population of Kashgaria the river appears in the literal meaning of "Tarim," *i.e.*, the nourishing river.

On the Yarkand river, notwithstanding its considerable breadth and vast length, navigation—even of rafts—does not exist; the cause of this is the rapidity of the current in the upper Tarim and the sparsity of the population on its middle and lower reaches. Between neighbouring villages communication is carried on by means of small canoes, on which rafts are constructed in case of need.

From a military point of view the most important section of the Tarim is that from Karchun (the point of exit from the hills) to Tugarak (Igarchi). In this section, a distance of about 35 miles, the Tarim forms a serious obstacle to an advance from Kashgar towards the richer and more productive districts of Southern Kashgaria—the southern part of the Yarkand oasis, the Karghalik and Khotan oases. Here the two chief roads cross the river, the summer road from Yarkand to Khotan through the village of Tugarak, and the winter road by the village of Painap; above Painap there are some second class roads between neighbouring villages. In winter (from the beginning of December to the end of February) this section of the river can be crossed without hindrance at any point. In spring (March and April), when the water of the river is diverted into the irrigation canals, horse fords are open in many places along the river, but the chief crossing place is at Painap. Opposite this village the river flows in a rocky, stony bed, with a breadth of about $1\frac{1}{4}$ miles. It has several branches, with a width of from 10 to 50 yards, and in places a depth of 6 feet. Both banks are open and steep, and about 5 feet high. On the right bank, opposite the crossing, and distant about a mile from the river, on a second ridge, raised above the level of the river some 20 feet, is the village of Painap, surrounded by fields and gardens. Beyond the

village, at a distance of about $1\frac{1}{4}$ miles, is a third ridge which bounds on the south-east the valley of the right bank of the river.

The crossing at Painap is accomplished by fording, but baggage, small animals and foot passengers cross the main branch in boats. When the water rises, the passage at Painap, where there are no convenient places for wharves, is transferred about 5 miles lower down, to Tugarak ; here the river flows in one stream with a breadth of about 370 yards. The passage is accomplished in boats, which resemble a box with a flat bottom and rounded corners. Each boat can carry 50 men or 16 horses at a trip.

In its upper course the river receives a number of mountain streams which flow from the ranges on both sides. Of these the more important are,—the Chibra, Bazar Dara, Pil, Chop, and Asgan Sal on the right, and the Khafaliang, Oprang, Ili Su and Mariong on the left. The river Oprang is formed by the Mustagh, Shimshal and Oprang rivers, which all take their rise in the glaciers of the Mustagh range and flow in narrow dark gorges. At their sources lie the passes into Kashmir. At the mouths of their valleys the numerous upper tributaries of the Tarim broaden, forming small areas suitable for cultivation. In the lower valleys of the Mariong, Chop, and Asgan Sal, appear the first Tajik villages and fruit gardens. Beginning from Kosarab the valley of the Tarim broadens more and more.

Left-hand Tributaries of the Tarim.

The Tash Kurghan river takes its rise in the glaciers of the Muztagh range near the Wakh Jir pass. From

The Tash Kurghan river. the Wakh Jir to the village of Ujadbai, a distance of about 65 miles, it is known as the Karachukar, and flows in an easterly direction, receiving on both sides a number of small streams, the Tagerman Su, Kukturuk, Bayik, Kilik, Mintaka, and the Northern Oprang. In this section the river flows through an upland valley, whose breadth is from 1 to $1\frac{1}{4}$ miles, and its dimensions are inconsiderable. From Ujadbai it bends to the north-north-west and keeps this direction until its junction with the Kara Su. North of Ujadbai it is called the Tash Kurghan river, and as far as its junction with the Kara Su it flows through an open valley, which is from 4 to 6 miles broad.

In its southern part, the Tash Kurghan valley is a sterile, rocky and in places sandy "sai"; the banks are steep, and rise some 300 feet above the river. Below Kyz Kurghan the valley is covered with fields and meadows. The banks are low and in places swampy. Near Tash Kurghan the river, separating into several branches, flows through a marshy meadowland about 2 miles wide. After its junction with the Kara Su the river bends sharply to the east, and

making some short sharp bends at Shindi and Baldir, flows in this direction as far as its junction with the Yarkand river, about 20 miles above Kosarab. In this latter section the river, breaking through the ranges of the Western Kuen Lun, flows through a narrow gorge with perpendicular banks, which form several terraces raised high one above the other. Only at the mouths of its tributaries does the Tash Kurghan gorge broaden out, forming small basins which are occupied by small Tajik villages.

The length of the river from its source to Kosarab is about 160 miles. Through its valley, as far as the village of Shindi, runs the most important road from Kanjut to Kashgar, with branches to Yarkand and Yangi Hissar. As far as Tash Kurghan there are two roads, one on each bank, and the river can be forded at any time of the year. From Tash Kurghan there is only one road, which crosses the river by fords near Tiznaf, and about 2 miles above Shindi near the village of Shalgin. At Tiznaf the river is from 20 to 35 yards broad. At Shalgin the river flows in two branches, and the width of each is from 15 to 20 yards. The depth of the fords at low water is not more than 5 feet.¹ At high water, from July to September, in consequence of the rapidity of the current and the rise of the water to almost twice its ordinary depth, the passage of the river below Tash Kurghan is extremely difficult, and the Shalgin ford completely disappears. At this time caravans from Tash Kurghan to Yarkand and Yangi Hissar have to travel *via* Tagharma and the Kok Mainak pass.

The Tash Kurghan river in severe winters freezes in December and the ice remains till the beginning of March. At this time communication between Baldir and Kosarab, which during the remainder of the year does not exist in consequence of the impossibility of moving along the river valley, owing to the steepness of its banks and the depth and rapidity of the stream, is established on the ice along the gorge of the river.

The Tash Kurghan river receives on the left the Kara Su, and on the right the Vacha. The Kara Su is

The Kara Su. formed by the union of several streams which flow from the glaciers of the Muztagh Ata and from the eastern slopes of the Sarikol range. About $1\frac{1}{2}$ miles to the north of Chushmah it falls into the Tash Kurghan river. In the Tagharma valley the Kara Su flows by numerous channels between broad meadows. From Tagharma to the valley of the Tash Kurghan river it flows through the Tangi gorge, which is about 4 miles long, and in its narrowest part does not exceed 80 yards in width.

¹ The "fordability" of a river in Kashgaria usually refers to the performances of yaks and camels. The former, according to Mr. Macartney, C.I.E., can cross safely a foaming torrent, saddle-deep in the current, and over huge boulders.

In the gorge the road from Tash Kurghan to Taghama crosses the river several times. The depth of the fords at the highest level of the water does not exceed 5 feet. The river is about 20 yards broad, with low, gently-sloping banks and hard gravelly bottom.

The Vacha takes its rise on the northern slopes of the Pichan-yart pass, and falls into the Tash Kurghan river near Baldir. Its dimensions are insignificant.

The next tributary of the Tarim is the Kizil Su, or Kashgar river. This has a certain military importance, in that it crosses the lines of advance from Semerechensk and Ferghana to Kashgar, Yangi Hissar, and the southern oases of Kashgaria, and so increases the difficulty of an advance on these roads.

It rises in Russian territory, in the glaciers of the Trans-Alai range, a little to the south of the Taun Muran pass. From its source to Ulugchat the river flows north-eastwards, thence south-eastwards to the mouth of the Markan Su ; from the mouth of the Markan Su it turns to the east and keeps this direction as far as Charwa (Charbag), about 20 miles to the east of Maralbashi, where it is lost in this broad reed-covered swamp. This swamp, contracting into a narrow strip to the south-east, is united by small branches with the Lalmoi swamp, through which flows the northern branch of the Yarkand river. Thus, although in small quantity, the waters of the Kashgar river finally flow into the Yarkand river.

The length of the river from its source to Charwa is about 320 miles. From Irkeshtam to its junction with the Uruk river the Kizil Su flows along a ravine, which has an average width of about 500 yards. At Myn Tur, Ulugchat, Sari Kamys, Yassi Kechik, Maral Tugai, Buri Tugai, and Ailyama, the ravine broadens out to from 2 to $2\frac{1}{2}$ miles in width ; here are met *tugrak* groves, alternating with small bushes. The banks of the river in the narrow places of the valley are steep, but in places they are low and gently-sloping. The river flows in a rocky bed, with a breadth of about 1,000 yards, and is divided into several branches. At low water the width of the principal branch does not exceed from 20 to 35 yards, and the depth from 3 to $3\frac{1}{2}$ feet.

From the mouth of the Uruk the valley of the Kizil Su gradually widens, and about 10 miles lower down it emerges on to the plain and throws out to the left two branches, which flowing in a north-easterly direction, cross the Irkeshtam road between Kichik Andijan and Kashgar. Both these branches flow between low open banks ; their width does not exceed 20 yards, and their depth at

low water 3 feet. Near Suluk both branches unite and are called the Tumen; on the right bank of the Tumen, about 3 miles above its junction with the Kizil Su, is situated old Kashgar.

At Kashgar the Tumen flows in a hard clay-sand bed about $\frac{1}{2}$ mile broad, with some small branches. The banks, for the most part, are perpendicular; their height over the level of the river is, in places, as much as 70 feet. The left bank commands the right, and on the former are situated the extensive villages of Kurghan, Daulat Bag, Awat, and Yangi Ustan.

The chief stream of the Kizil Su flows about 3 miles south of Kashgar in a broad (about $\frac{1}{2}$ mile wide) bed, with a hard gravel bottom. It has a few branches; the width of the largest of them at low water is not more than 25 yards, and the depth about 3 feet. The right bank of the valley of the Kizil Su is high, and generally perpendicular; the left is lower, and descends to the river by gently-sloping terraces. As far as the mouth of the Tumen both banks are covered with fields, gardens and farmsteads. From the mouth of the Tumen to Kara Yulgun, the Kashgar river flows in a broad valley (in places 1 mile broad), is covered with paddy fields and small swamps. The high left bank is desert from Yangi Ustan onwards; the right bank as far as Yangi Abad is covered with villages, cultivated fields and meadows. From Kara Yulgun the valley widens out to a breadth of about 3 miles, the banks become lower and less steep, and almost all the way to Maralbashi are covered with loess and sandy hillocks and *tugrak* groves mixed with clumps of "jida," tamarisk, "kyruk" and thistles. In places there are flat low areas, covered with reeds, which at high water are covered with water; the largest of them is on the left bank near the village of Jas Bulak. In the districts near Maralbashi, along the banks of the Kizil Su, extend cultivated fields, and about 7 miles lower down begins the broad jungly swamp in which it loses itself.

At Rakat Kupriak, where the old Aksu road crosses the river, the Kizil Su has a width at low water of from 20 to 35 yards, a depth of 10 feet, and a velocity of $3\frac{1}{2}$ feet, a second. At Maralbashi the river, having thrown off some branches to the right, narrows down to 15 yards, but its depth remains very considerable. Speaking generally, although between Kara Yulgun and Maralbashi fords are sometimes open, still the depth of water is so great that in this section we may consider the river as unfordable.

The road from Irkeshtam to Kashgar crosses the Kizil Su near Irkestam, twice at Myn Tur, at Sari Kamysh, and near Kichik Andijan. At low water the passage of loaded animals at any of the points mentioned does not present any difficulty, since the depth of water does not exceed 3 to 4 feet. At high water, however, which

begins early in May and continues till the beginning of August fording becomes extremely difficult, even for single horsemen.

At the first three points the level of the river is highest between 7 P.M. and 11 A.M., consequently caravans and travellers cross by day. The best time for crossing is between 2 and 3 P.M., because at this time the depth of the fords does not exceed 5 feet even at high water. The most dangerous of the crossings mentioned, at Myn Tur and Sari Kamysh, may be avoided by the road from Eghin to Sari Kamysh over the Suvankul, Akyń, and Chil Puchte passes. The passage at Kichik Andijan may be avoided by moving *via* Suluk to the bridges over the Tumen to the eastern gate of Kashgar.

The road from Semerechensk to Kashgar crosses the Tumen by fords at the northern gate of the city, and by two wooden pile bridges at the eastern gate. The bridges are weak and bad. On the road from Kashgar to Yangi Shar there are two solid wooden bridges across two branches of the Kizil Su, near its junction with the Tumen; the length of each is about 30 yards; the banks of the river near the bridges are strengthened with piles.

At high water, after the destruction of the bridges mentioned, an advance from the north on Kashgar and Yangi Shar would be difficult only on account of the steepness of the banks, since fords for the passage of infantry and cavalry could be found in many places, and only for the passage of artillery would it be necessary to make bridges, the materials for which are available. Thus the Kizil Su and the Tumen at Kashgar have only a tactical importance.

The road from Kashgar to Maralbashi and Aksu crosses the river at Kara Yulgun, about 6 miles before reaching Maralbashi, by wooden bridges about 25 yards long; besides these there is a bridge at Rabat Kupriak on the circuitous road by Yangi Abad. With the destruction of these bridges an advance from Kashgar towards the oases lying to the east of it might be delayed for some time, as fording is impossible in consequence of the depth of the river and the nature of its valley.

The river freezes in places, but only for a short time and not every year. The water has a saline taste, and at the time of the overflow it is muddy, but quite fit for drinking.

The Kashgar river receives on its left the Kok Su or Kosh Itak, the Eghin or Jol Boldi (formed by the junction of the Kara Tash, the Ak Terek and the Kara Terek), the Uch Tash (or Joulgan) which flows from the Uch Tash or Savayardin, the Uksalir from Akran, and the Kara Tal, Kan Su and Uruk with its tributary the Kan Jugan. On its right the Kashgar river receives the Markan Su with the Ayak Art, the Gez, and the Kara Tash.

The numerous northern tributaries of the Kashgar river are crossed by the Irkeshtam-Kashgar road; and the Uch Tash, which falls into it at Ulugchat, by the circuitous road *via* Eghin and Sari Kamysh. The size of the rivers is insignificant; they are all fordable even at high water, and consequently have only a tactical importance. A more serious obstacle for movement are the steep ascents and descents into their valleys, which are deeply cut into the surrounding hills.

The Suok or Toun, along the valley of which runs the road from Semerechenesk to Kashgar, does not at present reach the Kashgar river. It rises in the eastern slopes of the Suok pass; as far as Toun Tube the valley of the river is broad (about $1\frac{1}{2}$ miles), but about 4 miles lower down it narrows, forming a precipitous ravine, the breadth of which at the Balgin Bashi-Pas Kurghan ford does not exceed 230 yards, and in places is only 25 yards. Its precipitous sides rise from 1,000 to 2,000 feet above the level of the river. From Ak Chi the valley begins to widen, changing near Artish into a basin, which extends some 7 miles from west to east. At the town of Ak Tai the river flows through a valley, which is in places 600 yards broad.

The Turgat road crosses the Suok very often, and in places for a considerable distance it runs along its rocky bed. At high water the depth of water in the narrower parts of the ravine is as much as 5 to 6 feet, and consequently movement along the Turgat road then becomes extremely difficult, even for horsemen; at this time the circuitous road *via* Balgin Bashi, Ishtyk Kurghan, and Artish is used. Along the Artish basin the river flows in several small branches; after its exit from the hills it is lost in the sands situated to the north-east of the ruins of Khan Ui.

The river Markan Su rises in Russian territory, on the southern slopes of the Trans-Alai range, in the snow-topped group of Kizil Agyn. As far as Muk Kurghan it flows in a westerly direction, thence it bends to the north-east, somewhat below Kogren—again to the west, and at Ailyama it falls into the Kizil Su. Along the valley of the Markan Su runs the shortest road from Kashgar to lake Kara Kul on the Pamir, *via* Myn Ui and the Kizil Beles pass. The river flows occasionally through a narrow gorge, not more than 12 yards wide, and there again along a stony bed from 350 to 500 yards broad, shut in by perpendicular cliffs. In places the hills recede from it, leaving along its banks ledges or wide terraces. The road to the Pamir frequently crosses from one bank to the other. In autumn and early spring the depth of the fords is not higher than a horse's knees, but in the summer the water would come up under the saddle-flaps, and in some places the fords are even deeper; the

current of the river is very rapid. In the valley are extensive poplar groves and thickets of "oblepiki," wild roses and coarse grass.

The river Gez, called in its lower course the Yaman Yar, is formed by the junction of the Bulun Su and the Tumanchi. The former flows from the south, and drains lakes Little Kara Kul, Basik Kul, Bulun Kul, and Koshkandak. The latter flows from the northwest from the Kiyak Bashi and Muji valleys and is formed by the numerous streams which flow from the surrounding hills. Breaking through the Kashgarian hills, the Gez, for a distance of 80 miles from Tar Bashi to Tash Malik, flows in a north-easterly direction through a wild gorge which is bounded by high cliffs of conglomerate, schist and porphyry. As far as Kok Mainak the width of the gorge does not exceed 230 yards and the river flows in a single channel with high precipitous banks; below Kok Mainak, where the ravine widens out to from 900 to 1,200 yards, the Gez flows in a broad rocky bed, in several branches. Occasionally poplar groves, willows, "oblepiki," "yulgun," and white mountain pine, overgrown with wild hops, are met with. Between Tar Bashi and Kok Mainak fording is very difficult even at low water, as the river is about 5 feet deep even at the fords and is very rapid; in summer fording is quite impossible. Below Kok Mainak there are fords in many places, but they disappear in summer.

The road from Kashgar to Sarikol *via* Bulun Kul traverses the Gez defile. At Kok Mainak and Gez Karaoul, below the mouth of the Kok Sil stream, and at Bash Kupruk there are wooden bridges on the Caucasian system; they are 7 feet wide and from 15 to 20 yards long; from their construction they are suitable only for mountain artillery on pack animals. In order to avoid the more dangerous fords at high water, and in case of the carrying away of the bridges, ledges have been constructed, but at the present time most of them have fallen away. Below Kok Mainak, on the chief branches of the Gez, bridges with brushwood surface are constructed annually, but they are carried away at high water, consequently in summer the fords below Kok Mainak are avoided by the road from Kupruk Karaoul to Kosh Kishlak.

Near the post of Tash Malik the Gez emerges on to the plain and gives off to the right some considerable channels—Tetyr Ustan, Saryk Ata Ustan, Baryn, etc. From Tash Malik to Uram Basti the Gez flows in a north-easterly direction along a broad rocky bed. Somewhat below Uram Basti it bends to the east, crossing the road from Kashgar to Tash Malik; here the width of the river is about 25 yards, the depth 5 feet (in the beginning of April), the breadth of the valley about 350 yards, the right bank high and perpendicular, the left low and gentle. At Uram Basti there is a bridge,

which is suitable only for the passage of infantry and cavalry (width $3\frac{1}{2}$ feet). Below Uram Basti the Gez is divided into the large streams Kara Su, Tozgun, and Khan Arik. Dividing into a number of secondary channels, these streams water the southern part of the Yangi Shar district and unite by their branches with the Kashgar river. Somewhat to the north of Yapchan, the Kashgar-Yarkand road crosses the Khan Arik by an embankment about 85 yards long with two wooden bridges; the width of the embankment and of the bridges is 35 feet. At high water the embankment is often washed away by the river and the bridges destroyed. The Gez is only frozen over in its upper course, above Tar Bashi, but not for long and not every winter.

The Kara Tash river rises in the northern slopes of the Uzun Kir, near the Kara Tash pass; after its exit from the hills at Altynlik it divides into numerous branches, watering the fields of the northern part of the Yangi Hissar oasis and part of the Khan Arik oasis.

The Aksu river flows from the glaciers of the Sariasi range, about 50 miles north-north-west of Aksu.

The Aksu river. Turning to the south-east as it leaves the hills, it flows in this direction for about 120 miles to its junction with the Tarim. In its upper course as far as Schaichle the size of the river is inconsiderable. Below this village the river is divided into branches; at Lyangar, where it is crossed by the Aksu-Utch Turfan road, there are eleven; at the village of Chuk Tal, on the Kashgar road, there are three. On the Chuk Tal-Besh Arik section the width of the river is about 1,000 yards; below Besh Arik the river divides into two large branches; the right-hand stream is called the Kunya and the left the Yangi, and by these streams it flows into the Tarim about 10 miles above the mouth of the Khotan river.

The valley of the river is bounded on the east by a steep loess ridge, about 70 to 80 feet high, which is distant from the river about 10 miles. At the foot of this ridge are situated the towns of Old and New Aksu and some large villages. The banks of the river are steep, but not high, and there are villages and houses as far as Yangi Abad; below this on both banks extend *tugrak* and tamarisk groves, alternating with reeds and open spaces.

At low water (from September to the beginning of June) at Chuk Tal, Lyangar and higher up, the river is fordable, since the depth of the principal branch does not exceed $3\frac{1}{2}$ feet (the width does not exceed 60 yards, and the velocity is about $3\frac{1}{2}$ feet a second). At the villages named are light bridges, suitable for cavalry and

infantry, but these are carried away by the river at the commencement of high water. High water begins early in June and reaches its maximum in the beginning of July, when the river inundates the whole district, the level of the water rising from 3 to 5 feet above the ordinary. At this time ferries are run at Chuk Tal and Lyangar. Below Chuk Tal the river is unfordable even at low water ; on this section there are bridges only at Abad.

Thus in summer the Aksu river, owing to its width and depth, forms a strong defensive line, about 120 miles long, protected on one flank by the mountains and on the other by the Tarim, securely covering the town of Aksu and the eastern oases of Northern Kashgaria from the side of Kashgar and Utch Turfan.

The Ak Sai river rises in Russian territory not far from lake The Ak Sai, Kiz'l Kungal, Chatyr Kul. Until its junction with Kok Shal, or Tausl-kan river, the Janart the river flows from west to east, thence it turns to the south-east and about 10 miles above Chuk Tal it falls into the Aksu river. After breaking through the Kok Shal range by a wild ravine, the Ak Sai flows through a broad valley between the Kok Shal range and its eastern spur, the Kara Teke range. In the upper part of the valley there are excellent pasturages, and below Safr Bai the Utch Turfan oasis begins. After its exit from the Kok Shal ravine, the river flows in several branches along a stony bed, with a breadth of from 1 to $4\frac{1}{4}$ miles. At low water the width of the chief branch of the river does not exceed 60 yards, and the depth 2 feet. At high water the river fills the whole of its bed and is about 7 feet deep, forming a very serious obstacle to an advance from Prjevalsk through the passes of the Kok Shal range towards Utch Turfan and thence to Aksu. At high water a ferry is started at Aral on the Utch Turfan-Aksu road. A force advancing towards Aksu along the left bank of the river would be obliged to cross its tributary, the Janart, which in summer is a rushing torrent.

In its lower course the Ak Sai gives off to the right several branches which inundate the broad marshy depression called Ai Kul, which is crossed by the Aksu-Kashgar road between Sai Arik and Chuk Tal. Across the depression an embankment has been built and over the branches of the river substantial bridges.

The Ak Sai freezes over in the end of December, and the ice lasts until March. In the rapidity of its current ($5\frac{1}{2}$ feet a second) it considerably surpasses the Aksu river, but (according to the measurements of Sven Hedin) it yields to the latter as regards volume.

The Muzart river flows from the southern slopes of the Muzart The Muzart or Shah Yar pass. As far as the town of Shah Yar river. the river has a general direction towards the south-east. Between Ushtimi and Yakka Arik (Cher Chi) the river is crossed by the road from Kuchar to Aksu. Here the river is 200 yards wide (in September), and flows in several channels, the largest of which is about 20 yards wide. It is fordable, but guides are necessary on account of the swiftness of the current; at high water it is fordable in very few places, and on account of the velocity of the current fording is extremely difficult.

Near Shah Yar the river divides into two branches—the eastern flows into the long narrow lake-swamp, Pasnyn Kul, crossing the road from Shah Yar to Kuchar; the western flows at first towards the south-east, watering the town of Shah Yar and its neighbourhood, and then bends to the east, parallel to the Tarim. There is reason to suppose that below Pasnyn Kul both branches flow again in one channel, and consequently this lake appears to be a widening of the eastern branch. At the point where the river separates into two branches the inhabitants of Shah Yar have built a dam, by means of which at high water the surplus waters of the river are directed into the lake, so as to prevent an inundation; at low water, by closing the exit into the eastern branch, the flow of water in the western is increased. At Kokchi Yol (or Kok Yol) near Teres, the Muzart river flows into the Tarim, having at its mouth a breadth of 32 yards and a depth of about $3\frac{1}{2}$ feet. At high water a broad lake is formed here; into which flows part of the water of the Tarim and out of which flows the Inichke river. Thus the Inichke may be considered as the eastern continuation of the Muzart river, or as a branch of the Tarim. The Inichke flows in a narrow channel; its right bank is steep, and in places is as much as 14 feet high above the level of the river, the left bank is gently-sloping and considerably lower. Both banks are covered with *tugrak* woods, tamarisks and reeds. At low water the width of the river does not exceed 20 feet, and its depth $3\frac{1}{2}$ feet; at high water the width of the river is as much as 35 yards, the depth 7 feet, and the velocity 3 feet a second. In its lower course the Inichke is called the Chayan and separates into two branches; the northern—the Charchak or Yangi Su—flows into the Konche river near Kuenchi; and the southern, keeping the name of Inichke, flows into the Konche about 10 miles below Jirilgan. Both branches are about 10 yards wide and 3 feet deep; they inundate on the way a broad saline hollow and only reach the Konche at high water.

At high water the Muzart river, below the Shah Yar, and the Inichke are not fordable. Crossing is effected by rafts and boats.

On the lower part of the river, on the road from Khurla to Dural, there is a wooden bridge. The river freezes simultaneously with the Yarkand river in the end of November, and remains frozen about $3\frac{1}{2}$ months. Besides the Kuchar (Chian or Kok Su) river, in summer the waters of the Dinar reach the Muzart, but in winter and autumn they are lost in the reeds of the Sari Kamysh lake, to the south of Bugur.

The Konche river, the last tributary of the Tarim on its left, above Lake Bagrach Kul, is called by the (Khaidu Gol or Yulduz) Turkis the Karashar river, and by the Chinese the Khaidu Gol. This river rises on the western slopes of the Abdur Cholon heights, near the Khargati pass. Along the valley of the Little Yulduz (Baga Yulduz) it flows from east to west, receiving on both sides many small streams. Here the dimensions of the river are inconsiderable, its banks are covered with small lakes, thick reeds, and in places muddy impassable swamps.

Along the valley of the Great Yulduz the Khaidu Gol flows in several branches in a south-easterly direction; on its banks are numerous small lakes, and in places impassable swamps. The breadth of the river in the main channel is from 70 to 90 yards; its depth at low water about $3\frac{1}{2}$ feet and at high water from 7 to 10 feet. From the mouth of the Dalyn stream the river bends to the east, breaking through to the valley of the Bagrach Kul by the narrow wild gorge called the Dalyn Daban. From the mouth of the Arkhatyn the Khaidu Gol again bends to the south-east, and flows in the same direction until it falls, some 16 miles below the town of Karashar, into Lake Bagrach Kul.

From its exit from the Dalyn Daban ravine to Karashar the river flows in a very tortuous course, forming a number of islands, which are thickly covered with reeds and bushes. The banks are covered with high coarse grass and occasional *tugrak* trees. Below Karashar, where it is crossed by the great road from Karashar to China, the river is from 50 to 90 yards broad and about 6 feet deep at low water, and its velocity is about 3 feet a second; at high water the breadth increases to 120 yards and the depth to 15 feet. The right bank has considerable command over the left. The passage of the river is effected on large flat barges which have a carrying capacity of about $1\frac{1}{2}$ tons each. Below Karashar the river narrows down to about 40 yards, but its depth even at low water is from 20 to 30 feet. The banks are about 10 feet high and are covered with thick reeds.

At high water the Khaidu Gol is very muddy. It freezes in the beginning of December and opens again in the beginning of March. From lake Bagrach Kul, under the name of the Konche river, it

flows out, about 16 miles to the west of the mouth of the Khaidu Gol, in a westerly direction. From the village of Bash Agma it turns to the south-west, and breaks through the Kuruk Tagh range by a ravine which is about 7 miles long and 500 yards broad.

At a distance of about a mile from the south-western end of the ravine is the town of Khurla, situated on both banks of the river. The Konche river here flows in two branches, each about 10 yards wide; the depth of the river at low water is about 10 feet, and its velocity about 7 feet a second. In the town there is a solid wooden bridge of two arches.

Below Khurla the river continues for about 14 miles in the same south-westerly direction, and then bends sharply to the south-east, and even to the east, towards Jirilgan, until it meets the high plain sloping down from the Kuruk Tagh which compels it to turn again to the south-east; the latter direction is maintained until it separates into branches near Tikkenlik. From Khurla to Tikkenlik the Konche flows in a sharply-formed bed, from 20 to 30 yards broad, about 15 feet deep at low water, and with a velocity of not less than 4 feet a second. The banks of the river for almost its whole extent to Tikkenlik are steep and high; only occasionally are there short strips of low bank, which are covered with small pools and reeds. About 7 miles below Khurla begins a narrow strip of *tujrak* wood alternating with "jida" and tamarisk, which, widening out to 7 miles at Chigalik, extends along both banks of the river to Tikkenlik.

Near Tikkenlik the river, falling into a low-lying basin, forms a marshy expanse about 16 miles long, which is dotted over with little lakes and covered with thick reeds; here it divides into two branches. The western of these, uniting with the eastern branches of the Tarim, (the Kok Ala and Kumdan Tarim), forms the Kunchikkan Tarim or Eastern Tarim, which in its turn separates into two branches and falls by its right branch, the Chon Tarim, into the Tarim at Ayrilghan, and by its left into lake Chivellik Kul, which was formed about twelve years ago in what was formerly a saline hollow. From lake Chivellik there is a channel into the Tarim. The Kunchikkan Tarim is about 60 yards broad and about 7 feet deep; in the summer it is fordable in many places.

The eastern branch of the Konche, not far from Tikkenlik, falls into the marsh-lake Malyk Kul; on leaving this it flows, under the name of the Ilek, to the south-east, and then falls into a long lake which is covered with reeds and consists of four basins:—Avulu Kul, Kara Kul, Taek Kul, and Arka Kul, which are united by broad channels. From the southern part of the Arka Kul (Sogot) the Ilek again emerges and, having formed *en route* a chain of small lakes,

which have various local names, it falls into the Tarim about 12 miles below Ayrilghan. The average breadth of the eastern branch of the Konche river is about 15 yards, its depth about $3\frac{1}{2}$ feet, and velocity about $3\frac{1}{2}$ feet a second; in its lower course it narrows down to a width of two yards. Its banks are covered with thick reeds and *tugrak* woods.

The Konche river having left in lake Bagrach Kul most of its solid matter issues from it as clean transparent water, somewhat saline in taste, but quite fit for drinking. In the end of December the river is covered with ice of such thickness that during the three winter months it is everywhere possible to travel along it with loaded carts. After it thaws the level of the river rises, but to a small extent, so that the surplus water of the Khaidu Gol remains in Bagrach Kul. In the middle of the summer it becomes much shallower, but in the end of August, when the water not required for irrigation is let out of the channels, its depth again increases; in its lower course there is a certain rise of level in autumn owing to the commencement of high water in the Tarim at that season.

From Bagrach Kul to Tikkenlik the Konche river is unfordable. Besides the bridges already mentioned, there are ferries at Chigalik and Turpan Korula on the roads from Khurla and Turfan to the new town of Dural. Bridges have been built across the channels of the Tarim and the branches of the Konche in the neighbourhood of this town.

On to the area between the Muzart and Konche rivers there flow from the southern slopes of the Thian Shan a number of small streams which cross the road from Kashgar to Karashar. With the exception of the before-mentioned Kuchar and Dinar rivers none of them reach the Tarim, being lost in the sands and saline tracts to the south of the road. The dimensions of these streams are small, but at high water they present a series of considerable obstacles to an advance from Aksu to Karashar.

Right-hand Tributaries of the Tarim.

On its right bank the Tarim receives three large tributaries, *viz.*, the Tiznaf, Khotan, and Cherchen rivers. The two first reach it only at high water; the last does not flow directly into the Tarim, but first traverses the marsh-lake Kara Buran, into which the Tarim flows from the north.

The Tiznaf (called in its upper course the Khalastan river-- according to Korniloff) rises in the northern slopes of the main range of the Western Kuen Lun mountains not far from the Yangi pass, and to its junction with the Yarkand river it has a general direction

towards the north-east. In its upper course it receives a number of mountain streams which water the hill "begships" of Pokhpū, Shikhpū, Ghusa, and Usus. After emerging on to the plain the Tiznaf divides into several large channels, which water the Karghalik oasis. The river crosses the Yarkand-Karghalik road between the villages of Tugulaz and Karche. Here the width of the channel is about 750 yards; its valley is bounded on the left by a chain of low sandy mounds, and between this and the river there extends a broad saline strip which is traversed by three irrigation channels and the small stream Ishtan Saldi, a branch of the Tiznaf; on the right the valley is bounded by a steep ridge. The river flows in several branches; at low water the width of the principal branch is about 25 yards, and its depth $3\frac{1}{2}$ feet. At high water the Tiznaf is unfordable. It is crossed by a bridge at the village of Karche. The bridge is a wooden one of 8 spans, its length, including abutments, is about 500 yards, and its width about 28 feet.

Somewhat above the bridge the Tiznaf throws off to the left the broad branch called the Tiznaf Boi, which in its turn separates into a number of small narrow branches. The marshy valley of the Tiznaf Boi, which is covered with thick reeds, is crossed by the Yarkand road at Tokuz Kupruk (between the villages of Tugulaz and Miraklyar) by an embankment about 750 yards long and 20 feet broad, with a number of wooden bridges. The crossing of the Tiznaf Boi is difficult even at low water.

Below this district the Tiznaf enters a strip of loess hillocks which accompany it almost to the oasis of Merket. At low water the river only gets as far as Yantak, which lies on the northern edge of this oasis; at high water it splits up into several branches and almost reaches the latitude of Alaigur (Ala Aigyr). Some of them apparently flow into the Tarim, others into two small lakes, Bolbilek and Shamshi, which are situated in the desert, about 20 miles to the east of the Tarim. In its lower course the banks of the Tiznaf are covered with *tugrak* woods, the belt of which on the right bank is 12 miles wide.

The Khotan river is formed by the junction of the rivers Kara Kash and Yurung Kash. The Kara

The Khotan river. Kash rises in the little explored dis-

trict to the south of the Kharangu Tagh; as far as Shahidulla it flows in a north-westerly direction in the broad valley which separates the Kuen Lun from the eastern end of the Karakoram range. From Shahidulla the river bends to the north-east and breaks through to the Kashgarian plain by a wild, inaccessible ravine, which is hitherto unexplored. Before its exit on to the plain the

Kara Kash makes some sharp bends and then flows in a north-easterly direction as far as Koshlash (Koshilysh), where it joins the Yurung Kash.

The Yurung Kash rises in the hills on the east of the Aksai Chin, about 20 miles south of the At To pass. Its upper and middle valley, until it emerges on to the plain, is little known; like the Kara Kash it flows in a wild inaccessible ravine; after its exit from the hills it flows first in a northerly and then in a north-easterly direction, watering the Khotan and Tawakkel oases.

At Khotan (Ilchi), which is situated on both banks of the river, the Yurung Kash is crossed by the southern road from Kashgar to Keria and Cherchen.

After their exit from the hills, each river, breaking up into a number of branches, flows along a broad channel (about 1,200 yards across), encumbered with large boulders. At low water, from September to the end of May, both rivers are fordable. In the beginning of June, owing to the rain and the melting of the snow on the Kuen Lun, the Yurung Kash and Kara Kash increase in volume, the main branch attaining a breadth of over 200 yards, with a depth of 10 feet and a velocity of 4 feet a second. At this time the passage of the rivers is effected by large boats and only at the end of August are the fords again passable. At high water both rivers overflow their low-lying left banks, on which, for the protection of the adjacent villages, are constructed large cobble-stone embankments.

In the winter both rivers are frozen down to the bottom, and below Khotan are in places completely dried up, leaving only small pools. From the junction of the two rivers, the Khotan river flows in a northerly direction through the Takla Makan desert to the Yarkand river which it joins a little below the mouth of the Aksu river. The breadth of the channel varies between 600 and 1,200 yards; in places it divides into branches, and is continually striving to cut for itself new channels to the east of the former ones. Its banks are covered with thick *tugrak* woods and small bushes, amongst which the inhabitants of Aksu and Khotan pasture their sheep all the year round. The width of the wooded belt is in places as much as 8 miles. On its edge are high sand dunes.

The Khotan river only reaches the Yarkand river at high water; at other times the river, as it gets northward, becomes smaller and smaller, in consequence of the evaporation and absorption of its water. In October, when the irrigation of the fields in the Khotan oasis is finished, the level of the river rises somewhat, but after that it again falls and the river disappears about 15 miles to the north of the Mazar Tagh; below this point there are only small

pools of fresh water which remain until the next high water. Along the course of the Khotan river, from Koshlash to the Yarkand river, there are no settled inhabitants. Along its left bank, and in places along its very channel, runs the caravan road from Aksu to Khotan.

The sources of the Cherchen river are in the valleys of the northern highlands of Tibet. It is

The Cherchen river.

formed by the junction of the Patkalyk

and Gukerma rivers which flow from the northern slopes of the Arka Tagh range. Having cut through the Muzluk range, the Cherchen river, which is called in its upper course the Ulug Su, turns sharply to the west, and as far as its next bend, flows in a broad hill valley, separating the Tokus Davan range from the Astyn Tagh. In many places along this valley there is excellent pasturage. Having turned the western end of the Altyn Tagh, the river bends to the north to the town of Cherchen, where it turns to the north-east towards lake Kara Buran. From its turn to the north, the Cherchen river flows through the desert in a deep ravine, bounded by high steep banks. About 16 miles above Cherchen the ridge on the left bank, gradually becoming lower, retires from the river, and the valley rapidly becomes broader. At Cherchen the river divides into two branches, forming the island of Aralchik, on which is situated part of the Cherchen oasis.

The dimensions of the river here, where it crosses the great southern road, are so considerable that at high water it is unfordable, and consequently it is necessary to await the falling of the water as there are no means of crossing.

Below Cherchen, as far as Kain Laik, the river flows very tortuously along a valley which is from 4 to 7 miles broad, covered with poplar woods and a thick—in places impassable—undergrowth of reeds and bushes. In the vicinity of Tatran are a number of small lakes, some sweet, some saline, which are joined to the river by channels and which abound in fish. The belt of woods is bounded on both sides by sandy hillocks, as much as 360 feet high. The river is from 120 to 230 yards broad, and from 10 to 14 feet deep at low water; its bottom is muddy and consequently fording is extremely difficult. Below Kain Laik the Cherchen, running almost due east, flows between high banks prevent it from overflowing and the poplar wood disappears, giving place to reeds and bushes.

About 25 miles to the east of Kain Laik, the Cherchen, having divided into a number of branches, forms a vast swamp covered with thick reeds and dotted with small lakes; the reunion of the branches forms lake Kara Buran. One of the branches of the Cherchen falls into the largest lake of the whole Kemachashti

Kul, where it unites with the western branch of the Tarim. The main (southern) branch of the Cherchen, having flowed through the Kemachashti Kul and a series of other unimportant lakes, unites with the left branch of the Tarim. Notwithstanding its considerable size and abundance of water, the Cherchen only waters the Cherchen oasis. About 20 years ago the Chinese authorities, wishing to increase the area irrigated by the river, commandeered labour for the construction of an irrigation canal to the ruins of the old town of Cherchen, where it was proposed to found a new settlement. The work continued for three years, but was not successful; the canal, which had been constructed for a distance of some 20 miles, had to be abandoned, as it began to fill up with fluvial deposit, and the inhabitants of Cherchen, wearied with the fruitless labour, ran away.

Of the rivers which at present have no connection with the Tarim and its tributaries, the most important are the Kinkol, Sanju, Keria, Nia, Tolan Khoja, Bostan Tugrak, Molja, and Kara Muren.

The Kinkol flows from the northern slopes of the Kashka Su pass, and at Chong Karaul (not far from its exit on to the plain) it divides into nine branches, watering the villages of the Yangi Hissar district, which are situated on the Yarkand road from Yangi Hissar to Kizil. By its valley runs the bridle path from Sarikol to Yangi Hissar *via* Chahil Gumbaz. The road crosses the river in many places. At high water the fording of the Kinkol, especially near its junction with the Chumbus, where the river flows in one channel, is extremely difficult, and it is consequently necessary to have recourse to more circuitous routes. The valleys of the Kinkol and its tributaries are especially rich in pasturage; below Tokhtyn Agzi there are fields of barley in the valley.

The river Sanju flows from the glaciers on the northern slopes of the pass of that name. In the upper part of its valley are situated some small villages, and at its exit from the hills is the Sanju oasis, one of the richest in all Southern Kashgaria, and celebrated for its healthy climate. Below Sanju the river separating into numerous branches, waters the Zanguya oasis.

The Keria rises in the swamps to the east of the Aksai Chin, a little to the south of the source of the Khotan (Yurung Kash) river. It descends the Kuen Lun range in a narrow gorge in which the fall of the river is as much as 115 feet in a mile, and then flows in a northerly direction, watering the oases of Polu and Keria. At Keria, where it crosses the Khotan road, it has at ordinary level a width of from 20 to 35 yards and a depth of 2 feet. At high water its size is greatly increased—but it is fordable in many places.

The river usually freezes over in the end of November and the ice holds until about the middle of February. Below Keria the river, having split up into a number of branches which water the fields of the Keria oasis, enters first a belt of loess hillocks, and further on the sands of the Takla Makan. Thanks to the number of perennial springs which feed the river in the district of the Keria oasis, it flows the whole year to Katak, about 160 miles to the north of Keria. Below Katak the river, separating into a number of small streams, is lost in the thick *tugrak* woods and impassable jungles of tamarisk and reeds. In the woods and jungles along its banks from Keria to Katak only the huts of shepherds who feed their sheep here all the year round are met with.

To the north of Katak the woods change into sandy hillocks and only occasionally are seen, singly or in clumps, living and dead poplars and tamarisks, which mark the sand-choked bed of the Keria, and by which it can be traced as far as the Tarim. Water can be found in the river-bed at a depth of from 7 to 15 feet. According to the inhabitants of Southern Kashgaria, the Keria river formerly reached the Tarim; in its valley were situated flourishing towns, and along it ran a much-frequented trade route from Aksu to the Keria oasis. The ruins of one of these towns were recently discovered by the Swedish traveller Sven Hedin at Kara Dong, about 120 miles north of Keria.

The Nia river, which waters the Nia oasis, flows in spring and summer from the slopes of the frontier range of the Kuen Lun, and is a continuation of the mountain stream Ulug Sai. In autumn and winter the flow of the river ceases between the foot of the Kuen Lun and Nia; below Nia the river flows perennially for a distance of about 70 miles, fed by the numerous springs which rise in its valley.

The rivers Tolan Khoja, Bostan Tugrak, Molja, and Kara Muren flow from the high valleys of the Kuen Lun range, breaking through the frontier range. On the northern slope of the Kuen Lun these rivers flow in narrow ravines with steep conglomerate banks, which have a height of 100 feet and more. Along the bottom of the ravines large groves of poplar, with reed and tamarisk jungle may be met with. Near the lower Cherchen road the steep banks of the river ravines become considerably lower, and the rivers flow along broad beds over the rubbish-strewn plain; to the north of the road they are lost in the thick poplar woods, which extend along the road from Nia to Cherchen in a broad uninterrupted belt. At the end of the summer high water of all these rivers, like the Nia, dry up from the foot of the Kuen Lun to the Cherchen road. To the north of this road they flow all the year round for a distance of about 100 miles, thanks to the numerous springs in their lower valleys.

In the intervals between the rivers named, a number of small streams flow from the northern slopes of the Kuen Lun, the majority of which are lost in the sands without reaching the lower Cherchen road.

To complete the description of the rivers of Kashgaria we have only to mention the rivers Chargalik and Jakhan Sai which rise in the southern slopes of the Altyn Tagh ; after breaking through this range they are lost in the woods and swamps before reaching Lob Nor. In their lower courses, in the vicinity of Chargalik and Muran, are fruitful fields which are cultivated by the inhabitants of the shores of Lob Nor.

LAKES.

There are comparatively few lakes in Kashgaria. Scattered on the frontiers away from the main roads which traverse the country, they have no importance as means of communication. But forming vast reservoirs of water, for the most part fresh, the lakes ensure the possibility of existence for man in many places of Kashgaria. The most important lakes are Bagrach Kul, Lob Nor (Kara Koshun Kul), and Kara Buran.

Lake Bagrach Kul (Dengiz Nor, or Dalai Nor, according to the Chinese) occupies the deepest part of the basin which is separated from the Kashgarian basin by the Kuruk Tagh. From west to east the lake is about 24 miles across, and its greatest width is about 27 miles ; its average depth is about 35 feet. The water of the lake is sweet, and from November to March it is covered with ice 20 inches thick. The northern and western shores of the lake are low, and covered with thick reed jungle, which extends to a width of from 4 to 7 miles, and only in a few places does it narrow down to 600 yards ; beyond the edge of the reeds there extend saline tracts, covered in places with thorn-bushes and tamarisks, further on still the more elevated ground is covered with coarse grass and small groves of poplar and willow. On the southern and eastern shores the reeds cover only a narrow strip along the very edge of the lake, above which the shore rises steeply and is covered with sand dunes.

At the north-eastern end of the lake are scattered a few little islands which are thickly covered with reeds. Between the mouth of the Khaidu Gol and the outflow of the Konche river, the lake formerly extended far into the shore in a broad bay, which at the present time is almost dried up, and has formed a swamp covered with reeds and dotted over with numerous pools. The majority of the latter are connected with the Bagrach Kul and have fresh water. The Bagrach Kul abounds in fish, the catching of which gives employment to the Chinese of Karashar.

Lake Lob Nor, into which flow all the waters of the Kash-garian basin, is a broad expanse of water thickly covered with reeds. Its length from south-west to north-east is about 70 miles and its breadth about 25 miles. The lake is surrounded by a hillocky saline plain which occupies a vast area. At the south-west end of Lob Nor, near the mouth of the Tarim, is an open expanse of water about 7 miles in circumference and about 15 feet deep ; the further we go from the mouth of the Tarim, the smaller become the open areas, and the thicker become the reeds, which about 20 miles from the mouth of the river form an impassable jungle. The current of the Tarim is perceptible at a distance of nearly 15 miles from its mouth, where it flows in a narrow channel and consists of fresh water ; everywhere else, in the pools and bays, where the water is stationary, it is brackish, and further to the east it becomes so salt that even camels will not drink it.

About 25 miles south-west of Kara Koshun Kul lies Lake Kara Buran, which at the time of

Lake Kara Buran. Prjevalski's visit was a broad open lake ; now Kara Buran is a marsh thickly covered with reeds and dotted over with small lakes. Lob Nor and Kara Buran abound in fish, the catching of which is the chief occupation of the inhabitants in the vicinity. Above Kara Buran, besides the before-mentioned lakes Arka Kul (Sogot), Avulu Kul, and Chivellik, on the right bank of the Tarim is a group of 12 small lakes surrounded by reeds. The largest of these, the Yangi Kul, has a circumference of about 25 miles ; the others are considerably smaller. These lakes are artificially constructed by the natives, who let water from the Tarim into natural hollows by means of specially constructed canals. The fish come in with the water from the Tarim and here they increase, giving an excellent catch to the inhabitants of the neighbouring villages, between whom the lakes are divided. The water of all these lakes is saline, as fresh water is only admitted every three or four years.

Higher still in the valley of the Tarim and its tributaries, small lakes are fairly often met with which are filled with water at the time of the summer inundation, and do not dry up during the whole year. Also on the south, along the Nia-Cherchen road, there is a group of small, but deep (about 20 feet) lakes, which are fed by springs ; these lakes have brackish water with a considerable admixture of sulphurous hydrogen and are celebrated for their astonishing quantity of fish. There is a group of small fresh water lakes amid the sand and loess hillocks near Ordam Padshah to the east of Yangi Hissar.

In the valleys between the Muztagh Ata and the Sarikol range are situated the mountain lakes of Little Kara Kul, Basik Kul, Bulun Kul, Koshkandak, and Chak Kara Kul, of which we will describe in detail only the first.

Lake Little Kara Kul lies at the western foot of the Muztagh Ata, in a narrow valley which is bounded on the west by the precipices of the Sarikol range. The lake is about 3 miles long from north to south; its breadth at the northern end is about 1 mile, in the middle about $1\frac{1}{2}$ miles, and at the southern end it widens out to nearly 3 miles, and comes close up to the perpendicular cliffs at the foot of the Muztagh Ata. Thus the lake bars the road from Tash Kurghan and Tagharma to the valley of the Bulun Kul. It is deepest at its southern end, where it has a depth of about 85 feet; in the centre the depth varies from 50 to 70 feet. Along the eastern and western shores, at a distance from them of about $\frac{1}{4}$ mile, the depth does not exceed 3 feet. The road from Tagharma to Bulun Kul runs along the western edge of the lake, at the foot of the cliffs which bound it, by a ford the depth of which does not exceed $2\frac{1}{2}$ feet. The bottom is hard, and covered with small gravel. On the eastern edge of the lake there is a footpath, but it is so encumbered with débris from the cliffs that movement along it is extremely difficult. The Kara Kul freezes in the end of November, but along the edges and near the mouths of springs there are open spots during the whole of the winter. In the middle of the lake, the ice, constantly cleared of snow by the wind, forms a shining, slippery surface along which pedestrians can only move with difficulty. The lake opens in the middle of April. The water is fresh, clean, and quite fit for drinking. There are no fish in the lake. In the reeds, which cover its northern shore and the small islands scattered over the lake, there are large flocks of geese, duck and sheldrake throughout the whole summer.

In the summer, in the mountain girdle of Kashgaria, springs and wells are met with almost everywhere, but when the snow is all melted the majority of them either dry up, or produce brackish water, scarcely, or not at all fit for drinking. Such, for example, are all the springs on the Kashgar-Irkeshtam road between Ulugchat and Kan Su.

In the plain, springs, which are called by the natives "kara su" (black water, in contradistinction to the "ak su," or white water of the rivers flowing from the hills), are to be found fairly frequently in the valleys of the larger rivers of Kashgaria. But they are specially numerous in the belt along the northern foothills of the

Kuen Lun, along the line Guma-Khotan-Keria-Cherchen. Much of the water dashing down from the slopes of the Kuen Lun is absorbed by the shaly and conglomerate masses lying at the foot of the hills, and flows along them to the lower parts of the valleys, where, meeting impermeable layers of clay, it comes to the surface. By these springs the flow of water in the lower courses of the rivers of Southern Kashgaria is maintained, and by them is rendered possible the existence of the belt of *tugrak* woods along the Cherchen road. In those places where, in consequence of the formation of the hill slopes, springs are impossible, the belt of woods ceases, and the sandy desert advances to the very foot of the Kuen Lun. Such a gap may be seen between Ui Tograk (near Keria) and Nia. Nearer to the hills the water-bearing strata lie at a very considerable distance from the surface of the ground. This also explains why the wells at some of the villages on the Yangi Hissar-Cherchen road have the enormous depth of from 140 to 200 feet, while water may be obtained, as in the river-beds in the Takla Makan desert, at a depth of from 7 to 15 feet.

The facts given above regarding the geography of the country lead to the following general conclusions:—

- (1) The mountain girdle of Kashgaria is very well watered; water is met almost everywhere in the numerous rivers and streams which flow along its valleys and ravines. In summer there is even a superabundance of water. Next follows the district of the Lower Tarim and Konche river, where water is to be had in abundance all the year round. The foothill belt of Kashgaria is best watered in its western section between Kashgar and Karghalik; then follows the belt along the northern hills and then Southern Kashgaria between Karghalik and Cherchen. Finally the most poorly provided with water is the central, Takla Makan, desert, where water is only to be found in the beds of the rivers which cross it.

The comparative scarcity of irrigation in the foothill districts of Southern Kashgaria depends principally on two factors, the non-existence in the mountains of the Central Kuen Lun of large glaciers, and the gradual diminution of the rainfall from the south-western to the north-eastern districts. While the rivers of Northern and Western Kashgaria are fed by the numerous glaciers of the Thian Shan and Western Kuen Lun, most of the rivers of Southern Kashgaria receive their water from the melting of the snow on the slopes of the southern frontier range. But as the quantity of snow and rain falling on this range diminishes

from south-west to north-east the hill vegetation gradually becomes scantier in the same direction. At the commencement of the summer, the rivers of Southern Kashgaria rapidly fill up with water, but afterwards it rapidly falls, leaving only deep dry ravines. The previously mentioned belt of springs lies to the north of the Cherchen road, along which is located the settled population of Southern Kashgaria.

- (2) In summer, the rivers of Kashgaria have a great quantity of water, which far exceeds the amount required for the irrigation of the present cultivated area. The very late rise of the river does not admit of the utilization of this abundance of water; the low level of the water in the rivers in the early spring, when there is the greatest need of it, causes the inhabitants of the villages which are distant from the heads of the irrigating channels, and where they already feel the want of water, to considerably reduce their area under cultivation. Notwithstanding the industry of the inhabitants of Kashgaria, the existing irrigation system could hardly be increased by them to such an extent as to utilize the supply of water which at present runs to waste; for this would require the energy and technical knowledge of the European, and also considerable co-operation on the part of the Government. According to the opinion of M. Bogdanovich, the construction of artesian wells would utilize the water of the deep water-bearing strata of Southern Kashgaria, and would call to life broad areas which at present, owing to the want of moisture, are sterile deserts.
- (3) In summer, troops operating in Kashgaria would everywhere find water in abundance, but on the other hand every stream and every river would present a more or less serious obstacle. In winter, the rivers are covered with ice or their level is so much reduced that they lose their importance as obstacles. But the provision of drinking water might present a very serious difficulty. In winter, the villages which are situated on the irrigation canals do not use running water, the flow of which in the canals ceases about the end of November, but get their water from ponds, which are filled in the autumn, and in which the water remains until the following spring. Owing to the extremely insanitary habits of the natives, these ponds rapidly become foul, and form nurseries of every possible disease, and consequently the use of water from them would affect very unfavourably the sanitary condition of the troops.

The best time for the movement of troops in Kashgaria would be either from September to November, or in March and April. The level of the rivers at these times is very low, especially in spring, when almost all the water is drawn off for the irrigation of the fields, and besides, in each village along the road, running water could be obtained.

CHAPTER II.

ETHNOGRAPHY.

[Description of various races and tribes : their Numbers and Sub-Divisions ; Religions ; Languages.]

DESCRIPTION OF VARIOUS RACES AND TRIBES, ETC.

THERE is no accurate information regarding the number of the inhabitants of Kashgaria. The Chinese Government from time to time, for fiscal reasons, carry out an enumeration of the agricultural divisions subject to taxation, and at the same time information as to the number of houses in the district is collected.

This information, which is collected by the lowest grade of Population. Government official—the “Begs,”—

under the supervision of the Local Government, is kept secret, as with it, is indissolubly connected the private income of the head of any particular district, which is collected by him, over and above that laid down for that district by the chief authority of the Local Government. It is not always possible to make use of this information and it is also open to correction. In the literature on Kashgaria the following information is given as to the population at various times:—

Upon Chinese authority, at the beginning of the nineteenth century it reached .. 700,000

According to Forsyth in 1873, including the oasis of Kunya Turfan 1,015,000

According to Forsyth in 1873, excluding this oasis 959,000

According to Kuropatkin in 1877, including the oasis of Kunya Turfan 1,200,000

According to Prjevalski in 1884 2,000,000

According to Matusoff in 1888 750,000

According to Pevtsoff in 1890 2,000,000

According to the Chinese official data for 1902 1,200,000

Collating these data with the information collected by the Swedish traveller Dr. Sven Hedin about the separate districts of Kashgaria, and with that gathered during the last few years by Russian officers, we can reckon the population of Eastern Turkistan, as some 1,626,000 persons of both sexes. The total given is probably somewhat lower than the actual number of the inhabitants of the country, but in any case it is sufficiently accurate for all practical purposes. If we take the whole area of the country as about 325,000 square miles, the population works out to about 5 persons per square mile. But in the deserts there are no inhabitants

at all, if we except a few hundred shepherds, who occasionally are met with in the forests of the Khotan river, the Keria river, and the Tarim. Excluding the Takla Makan, we arrive at the fact that in the belt of oases and in the mountains, where the whole population of the country is gathered, there are about 360 persons to the square mile (*cf.* page 55).

The figures given for the population of Kashgaria, according to its principal administrative districts, are as follows :—

District.		Houses and huts.	Inhabitants.
Kashgar	..	63,940	319,700
Yangi Shar	..	45,700	228,500
Maralbashi	..	4,000	20,000
Yangi Hissar	..	24,700	123,500
Yarkand	..	41,100	205,500
Sarikol	..	990	5,000
Karghalik	..	31,600	155,000
Khotan	..	36,000	180,000
Keria, Chira, Nia, and Cherchen	..	5,400	27,000
Utcp Turfan	..	4,200	21,000
Aksu	..	38,000	190,000
Kuchar	..	13,000	65,000
Karashar, Bugur, Khurla, and Lob Nor	..	17,100	85,500
TOTAL	..	325,730	1,625,700

The inhabitants of the country, according to their habits, may be divided into Settled, Nomads, and Semi-settled, or Pastoral. The nomads, who include the Mongols and Kirghiz, live on the inner slopes and in the valleys of the frontier ranges, from the Little Yulduz in the north-east, to the sources of the river Sanju in the south. The semi-settled population consists of the dwellers in the valleys of the Upper Yarkand or Raskam river, the Upper Tiznaf and its tributaries, the Tagliks in the Kuen Lun mountains on the southern frontier of Kashgaria, and the shepherds in the forests of the Khotan river, Keria river, and Tarim.

Tagliks (highlanders) is the term applied by the settled inhabitants of the country to the natives who herd the flocks belonging to the dwellers in the oases. This employment is passed on from father to son, so that many generations of Tagliks spend the whole

of their lives among the mountains. The Tagliks during the summer live with the flocks on the high mountain pastures, but towards winter come down into the lower levels of the valleys, and on to the northern foothills of the Kuen Lun, where they dwell in caverns or mud huts. Near their abodes are usually a few small patches of barley, for the watering and reaping of which some of them remain behind in the summer.

The majority of the Tagliks are concentrated in the mountains between the sources of the Yurung Kash and Keria rivers; from here towards the north-east, the density of the pastoral population gradually decreases. In round figures, the nomads and semi-settled inhabitants of Kashgaria do not exceed 125,000 persons (including some 88,000 nomads), so consequently the total the settled population reaches is 1,500,000 souls. The settled population are concentrated in the sub-mountain belt and in the oases.

The oases of Kashgaria occupy a small area, in comparison with the total area of districts or provinces in which they are included, therefore the density of the population per square mile in the oases, is very much higher than that in the provinces and districts; thus —

Oasis.		Area in square miles.	Inhabitants per square mile.
Aksu and Utch Turfan	.. .. ..	700	301
Maralbashi	.. .. ..	100	200
Kashgar (and Yangi Shar)	.. .. ..	1,100	472
Yangi Hissar	.. .. ..	250	494
Yarkand	.. .. ..	530	388
Karghalik	.. .. ..	180	850
Khotan	.. .. ..	450	400
Chira, Keria, Nia, and Cherchen	.. ..	180	150

These approximate data show, by the greater density of settled inhabitants, that the oases of Western and Northern Kashgaria are the favourite regions, while in Southern Kashgaria the density of the population markedly diminishes, the further east we go.

As regards the division of the inhabitants into sexes, data is only available for some individual districts.

The enumeration lists in 15 villages of the Yangi Hissar district show that in these villages, out of 20,459 persons, 10,373 were males and 10,086 females, consequently for every 100 men there

are 97.2 women ; such a proportion of the sexes, according to some investigations, is common among all the agricultural population of the country ; in the towns however, especially in such crowded centres as Kashgar, Yarkand, and Khotan, a great preponderance of women is noticed. But taking into consideration that the town population consists of not more than 15 per cent. of the whole population of the country, we may assume that the males predominate.

According to an approximate estimate, the different races inhabiting Kashgaria form the following percentage of the total population :—

Races.	..	..	..	..	..	1,456,000	89.5
Kara-Kirghiz	..	..	..	..	..	43,000	2.6
Mongols	..	..	..	..	..	45,000	2.8
Dungans	..	..	..	..	..	25,000	1.5
Dolons	..	..	..	..	..	30,000	1.8
Tajiks	..	..	..	..	..	13,000	0.8
Chinese	..	..	..	..	..	6,000	0.4
Andijanis	..	..	..	..	..	3,000	0.2
Indians	..	..	..	..	..	5,000	0.3
Gypsies	..	..	..	..	..	1,000	0.1
TOTAL		..	1,627,000	100			

The majority of the settled inhabitants of Kashgaria are the descendants of the ancient aborigines of the country, who were undoubtedly of Aryan origin, and who have mixed with the tribes which arrived later. The various conquerors of the country, Arabs (who penetrated here at the beginning of the 8th century), Mongols, and Chinese, have left their traces, so that among the people there is no general, all-pervading, ruling type ; but signs crop out, here of one, there of another, of the mixed races.

In Southern Kashgaria traces of the Aryan type have been well preserved ; in the Western districts the Turkoman predominates, and in the oases of Northern Kashgaria (commencing with Aksu) the Mongolian, while in the districts adjoining China, the latter gives way to the Chinese type.

These racial differences, in conjunction with the geographical fact of their distribution into oases, which are separated by wide deserts, have brought about the result that the settled population of Kashgaria have no knowledge of national unity, but regard themselves as members of various tribes which correspond with

the oases inhabited by them, *e.g.*, Kashgaris, Yarkandis, Khotanis, etc. For these reasons, Eastern Turkistan has always proved an easy prey to the foreign conqueror ; and the Chinese, after the insurrections here, always succeeded, without any special effort, in re-establishing their rule in the country.

Very rarely does one hear the term "Erlik," *i.e.*, "a native of," or "Alti-Sharlik," which is literally, "an inhabitant of the six cities." The latter term is employed chiefly by Ferghana Sarts. The Chinese call the settled population of Kashgaria "Chanta," which means "Turban wearers," or Muhammadans.

In European literature about Kashgaria, also, there is no generally used term for the settled inhabitants of the country. Kashgarian is used, as also Djeti-Shars and Alti-Shars, but most generally Eastern Turkomans.

To this same mixed breed belong, in origin, religion and language, the Tagliks of the Kuen Lun, and the pastoral population in the forests of the Tarim, Khotan, and Keria rivers.

The Eastern Turkomans are at present a peaceful, kindly people, distinguished for hospitality, readiness to oblige, and their inclination towards a quiet family life, but the harsh conditions of life in their country have developed among them covetousness, hypocrisy, servility, and an extreme obedience to authority, which borders on a dull indifference.

The Kara Kirghiz, who number about 43,000 of both sexes, occupy the mountain districts of Kashgaria,—roughly from the meridian of the town of Kuchar on the north, to the sources of the river Sanju on the south ; they call themselves Kirghiz, but the Chinese call them "buruts."

All the Kirghiz of Kashgaria are nomads, and belong to the Sunni sect of Muhammadans ; they talk a special dialect of the Turki language ; as regards their origin, they are related to the nomad Kirghiz of Ferghana and Semerechensk, and a considerable part of them emigrated from Ferghana, comparatively recently, during the last years of the independence of the Khokand Khanate. The Kirghiz of Kashgaria, like those of Semerechensk and Ferghana, are formed into two large tribes of the Otuz-Ogul and Ichkilik, who in their turn are sub-divided into small divisions and races, as enumerated in the following table. For administrative purposes the Chinese have organized the Kirghiz into "Begships," which do not correspond with the tribal divisions. The "Begships" are named after the rivers, valleys or more important localities, occupied by the nomads or by their winter camps.

Name of the "Begship."	Number of tents.	Name of the tribe.	District.
Aksu	2,000	Khutchi Cherik Kizil	Aksu.
Utcp Turfan ..	1,060	Khutchi Adek Bakti Kara Kash Toimat	Utcp Turfan.
Jai Tube	300	Khutchi	
Kara Jilga Karaul ..	200		
Chim Kurghan ..	300		
Maidan (Tangitar) ..	300		
Mirza Terek ..	200		
Chakmak	350	Chong Bagish ..	
Yagach Art ..	250		
Kanjungan	180		
Uksalir	300		
Ulugchat	200	Uvash	Kashgar.
Kara Terek	100	Jori	
Eghin	150	Uvash	
Kuruk Sakal (Nagra Chaldi). Tokaibashi	150 70	Do. Do.	
Upal	200	Tyet	
Chimgan	500	Kipchak	
Oi Tal	100	Oi Tag Naiman .. Sugurluk Naiman ..	
<i>Carried over</i> ..	6,910		

Name of the "Begship."	Number of tents.	Name of the tribe.	District.
<i>Brought forward</i> ..	6,910		
Khan Terek ..	100	Chal Tyet ..	
Gez ..	119	Gez Naiman	
		Kupruk Art Naiman ..	
		Tugai Naiman ..	
		Kuran Naiman ..	Kashgar.
Muji-Kiyak Bashi ..	180	Kyek Naiman ..	
		Jerdi Naiman ..	
Subashi-Kara Kul ..	80	Kara Tyet ..	
		Juvan Put Naiman ..	
		Kara Tyet ..	
		Bostan Kesseyk ..	
Tagharma ..	100	Meshke Kesseyk ..	
		Kara Sadak Kesseyk ..	Yarkand.
		Kizil Ayak Kipchak ..	
Karachukar ..	25	Tyet ..	
		Bostan Kesseyk ..	
		Kara Tyet ..	
Kara Tash ..	230	Yaman Tyet ..	
		Nuigut ..	
		Mirza Naiman ..	
Kizil Tagh ..	170	Toilyac Kipchak ..	
		Juvan Put Naiman ..	Yangi Hissar.
Kinkol Charlun ..	130	Kara Kipchak ..	
		Sart Kipchak ..	
Pas Rabat ..	95	Meshke Kesseyk ..	
		Kara Sadak Kesseyk ..	
<i>Carried over</i> ..	8,130		

Name of the "Begship."	Number of tents.	Name of the tribe.	District.
<i>Brought forward</i> ..	8,130		
Kizil Tagh II ..	183	Kyek Naiman ..	
Chumbuz ..	115	Kizil Ayak Kipchak .. Toguz Kipchak .. Chal Tyet .. Bostan .. Naiman ..	Yangi Hissar.
Sanju-Suget ..	90	Tyet .. Tismat .. Tyet .. Kesseyk ..	Karghalik.
Raskam ..	60	Kizil Ayak Kipchak .. Bostan .. Naiman ..	
Total ..	8,578		

The principal occupation of the Kirghiz is cattle-breeding, but some, in addition to this, occupy themselves with agriculture, although to a very limited extent. Their nomad life, and the barrenness of the mountains on which they live, have produced in them a bold, enterprising character, and the ability to find their way about, in any locality, and under any circumstances.

The Mongols of the Karashar District are divided into two tribes, the Torguts and Khoshuts; the first number from 30,000 to 33,000, and the

Khoshuts from 10,000 to 12,000. In the summer, from May to September, both these tribes wander in the mountain valleys of the Great and the Little Yulduz, which are celebrated for their excellent pasturage; in the autumn they come down into the Karashar basin, and till spring they remain with their flocks in the thickets of coarse grass and reeds, which bound the northern shores of Bagrach Kul.

In the winter the Mongols occupy themselves in catching fish in this lake. A small part of the Torgut tribe live the whole year round on the steppes close to Karashar, and occupy themselves with agriculture.

The Mongols are Buddhists in faith. This religion, with its foundation on the futility of all earthly life, and with its strivings toward the destruction of all individuality, has long since destroyed in the Mongols all those military instincts which were such a distinct trait of the character of their ancestors in the time of Jenghiz Khan, and has made the present day Mongol a peaceful nomad, altogether averse to any attempt to better his condition.

The Dungans, who are called by the natives of Karashar "Tongans," but by the Jenghez "Khoi-Khoi,"
The Dungans. are representatives of a people whose

origin up to now is not quite clear. The Dungans themselves say, sometimes that they are the descendants of Arabs, and sometimes that they are the descendants of the warriors of Jenghiz Khan and Tamerlane, who remained behind in China after the departure of the conquerors, and who married Chinese women. They derive their name from the Turki word "Turgan" (those who remained behind). European savants are divided in opinion on the question; some affirm that the Dungans are the descendants of the Uighurs, a people of Turkoman origin who lived in Eastern Turkistan in the 1st century of the Christian era, a part of whom in the 13th and 14th centuries were forced by the Chinese to emigrate into the provinces of Kansu and Shensi, and there in the 14th century embraced Muhammadanism, which had penetrated from Kashgaria; others say that the Dungans are the descendants of the natives of Samarkand, Bokhara, and other towns of the Turko-Persian west, and were brought there as slaves, and forcibly settled by the Mongols in the frontier districts of China; finally, others consider the Dungans to be genuine Chinese by descent, but who had adopted Muhammadanism, and they derive the name from the Chinese word Ten-Djen, which means "Military settlers." Whatever may be their origin, they, in consequence of their long association with the Chinese, have adopted from the latter their language, dress, customs, and outward appearance, but in their physique they differ somewhat from the Chinese, as the Dungans in general are taller, stronger, and better made.

In religion the Dungans belong to the Sunni sect of Muhammadans. Religious differences and the march of events have made enemies of the Dungans and the Chinese, and they look on each other with undisguised hatred. It is known what terrible cruelties were committed on both sides, during the Dungan Rebellion from 1861 to 1876.

A considerable part of the Dungans, who are at present living in Kashgaria, had settled there before the rebellion, but the majority have come during the last two decades from the provinces of Central China, Kansu, and Shensi.

All the Dungans live a settled life, principally in the towns; they occupy themselves with agriculture, gardening, horticulture, trade, and as artizans; a few serve in the army. In Kashgaria, they are met with everywhere, but the majority are concentrated in the Karashar District, in the neighbourhood of Karashar, and around Kara Kul, on the lower reaches of the Konche river. In the latter locality the Dungans, to the number of 3,000 families, came from the province of Kansu after the rebellion of 1895; part of them settled here voluntarily, having escaped from their permanent abodes along the mountains, through Sining and Sa Chu; a part even came with the permission of the Chinese Government. The settlers were given arable land, but owing to bad harvests, and unproductive soil, their affairs did not prosper. About 1,000 families have already emigrated from Kara Kul, and have scattered themselves in the neighbouring provinces and districts. At the present time the number of Dungans among the population of Kashgaria may be estimated as follows:—

			Houses.
Kara har oasis ..	..	..	2,000
Kara Kul locality ..	..	..	2,000
Khurla oasis ..	..	..	200
Kuchar ..	..	..	105
Aksu ..	..	..	55
Urch Turfan ..	..	..	65
Maralbashi ..	..	..	15
Yangi-Shar and neighbourhood ..	..	..	110
Kashgar ..	..	..	15
Yangi Hissar ..	..	..	3
Yarkand ..	..	..	35
Karghalik ..	..	..	3
Khotan ..	..	..	34
TOTAL ..			4,640

Altogether 4,640 houses, or calculating five persons per house, from 23,000 to 25,000 of both sexes.

The origin of the Dolons or Dulans also is not very clear. The greater portion of them, about 4,000 The Dolons. families, live a settled life in the Maralbashi district, while about 2,000 families live in the Aksu and Urch Turfan districts. According to one authority, the Dolons are

descendants of prisoners brought in the 4th century, Hejira, by Sultan Haroun Bogra Khan, from what is now Russian Turkistan. According to another authority, they are Mongols who settled in Kashgaria 170 to 180 years ago, when the Sungars or Kalmuks were rulers. The last supposition is probably the more correct as the Mongol type is well preserved among the Dolons, especially among the women, and besides, in their customs, and in the motive of their songs, one can trace evidence of their Mongol origin.

They use a dialect of the Turki language, slightly different from the speech of the inhabitants of the oases of Kashgar and Yarkand. They are Sunni Muhammadans.

The representatives of the Aryan races in Kashgaria appear to be the Tajiks of Sarikol, the Wakhis (settlers from Afghan Wakhan) and the

inhabitants of the three mountain "Begships" of Shikhpu, Pokhpu, and Chipan, in the south-west portion of the Karghalik District. The Sarikol-Tajiks ("Galcha") or Sarikolis, as they call themselves, lead a settled life in the Tash Kurghan, Tagharma, Vacha, and Mariong valleys, and along the Yarkand river from the Mariong to Kosarab. In 18 villages occupied by these tribes, there are about 850 houses, or about 4,500 people of both sexes. In their origin, the Sarikolis are related to the Tajiks of Wakhan, Shignan, and Roshan; they speak a special dialect of old Persian, having a general resemblance to the dialect of the people of the above-mentioned districts, but with some peculiarities. In religion they are Shiah. Among the inhabitants of the Tash Kurghan and Tagharma valleys typical Tajiks are met with, that is, people of tall stature with large bushy black beards and sharply defined, curved eyebrows; one meets also types which clearly show Kirghiz blood. In the remaining valleys of Sarikol the characteristic marks of the inhabitants seem to be a thick broad body, with flaxen hair and grey eyes.

The Wakhis, who live in small villages in the valleys of the Kilian and Upper Tiznaf rivers near the Takhta Kuram, came as settlers to Kashgaria from Wakhan at the end of the last century; in addition to these, about six or seven years ago, about 35 miles to the south of Tash Kurghan in Sarikol, Afghan exiles from Wakhan founded the settlement of Dafdar (Dehda) in which there are now about 40 houses; the total number of Wakhis in Kashgaria is about 600 to 700 persons of both sexes. Their customs and language do not differ from those of their kindred in the valley of the Upper Panja, and like them they are Shiah Muhammadans.

The inhabitants of the "Begships" of Shikhpu, Pokhpu, and Chipan (which are situated in the south-west mountain districts of the Karghalik District, among the deep, inaccessible valleys of the

Asgan Sal, the Upper Tiznaf and its tributaries, the Pokhpu, the Chukush, Yulung, Bulung, Usus and Gusos), are undoubtedly the descendants of an ancient people who saved themselves from extermination, or mixture with other races, by the inaccessibility of the localities occupied by them. Amongst these mountain tribes one very often finds people with fair or reddish hair, and grey eyes, which show their connection with the Tajiks of the neighbouring valleys of the Yarkand, Vacha, and Mariong rivers. Like the other natives of Kashgaria, these mountaineers speak the Turki language, but among them there is a special dialect, which, judging by the names of the villages, mountains, rivers, etc., differs considerably from the Persian language and from the dialects of the Tajiks of Sarikol. In religion the mountaineers of Shikhpu, Pokhpu, and Chipan are Muhammadans of the Shiah sect. Their totals are —

	Villages.	Houses.
“ Begship ” of Shikhpu	.. .. 5	600
“ Begship ” of Pokhpu	.. .. 5	700
“ Begship ” of Chipan	.. .. 6	250
	16	1,550

with a population of about 8,000.

Probably to the same race belong those mountaineers who inhabit the inaccessible ravines of the Kara Kash river below Ir-Nazar-Kurghan, and the Nisa river, a tributary of the Yurung Kash.

The settled inhabitants of Southern Kashgaria call these mountaineers “ Pushpa,” and declare that they speak a language totally different from the Turki and Persian languages.

The Tajiks of Sarikol live a settled life collected in the broad parts of the valleys, in somewhat crowded villages, and occupy themselves with agriculture, and also with cattle-breeding. At the beginning or middle of May the majority of the inhabitants of the Sarikol valleys go with their flocks to the upper valleys, where they remain till the autumn, leading a nomad life ; in the villages only the poorest people who do not own cattle are left ; among the Wakhs of Kashgaria and the mountaineers of the Tiznaf, on the contrary, cattle-breeding is the principal occupation, and agriculture only a secondary one. They live in small villages, in the winter in mud huts, or cottages made of stone, in the summer in tents ; somewhere or other in the neighbourhood are patches of ground planted with barley. The cattle usually graze the whole year round on the neighbouring mountains. At night they are brought down to the villages. These tribes only wander from place to place with their

flocks and tents on those rare occasions when no grazing is available in the immediate neighbourhood of their settlement, on account of drought.

The Chinese constitute of about 6·4 per cent. of the population of Kashgaria. At the end of the seventies in The Chinese. the last century, on the re-establishment of Chinese authority in Kashgaria, the Chinese Government, recognizing the weakness of their local position, took energetic measures for the strengthening of the Chinese element in the pacified districts, in order to form local contingents for the completion of their army. With this object they tried to introduce colonists from the interior of China into the country and to detain retired soldiers by gifts of land, by grants of money for building houses, and by freeing them for a time from rates and taxes; in Zungaria the efforts of the Government in this direction met with considerable success; but as regards Kashgaria, the colonising gets on very slowly, although it cannot be said that a lack of unoccupied land was an obstacle to its success. Upon the re-establishment of the authority of the Chinese in Eastern Turkistan, all the land belonging to Yakub Beg, his Government, his adherents, and all the principal people who took part in the late insurrection, and all the estates which were unclaimed, after the measuring up of the private property, became the special property of the Chinese Government and gave them a considerable quantity of land, which they could use for their colonising scheme; but the distance of Kashgaria from the interior provinces of China, and the constant fear of revolts which in former times were always accompanied by a general massacre of the Chinese, greatly hindered the immigration of Chinese settlers into the country. Not counting the officials, the army, and, generally speaking, the servants, the Chinese in Kashgaria are traders, usurers and artizans; there are very few Chinese peasants in the country who own land and are employed in agriculture; the greater part of them are concentrated in the neighbourhood of Yangi Shar. Here on the confiscated lands, and handed over to colonists on lease, are 445 Chinese families, the majority of whom are old soldiers who served in the Taifurn Army¹ of Yakub Beg.

Every year more retired soldiers of the Yangi Shar and Kashgar regiments arrive. In round numbers the Chinese population in Kashgaria—settlers, traders and artizans—but not counting the army and officials, amounts to 1,200 families, or about 6,000 persons of both sexes.

¹ The Taifurn Army of Yakub Beg was raised from Chinese soldiers who saved their lives at the time of the rebellion in 1863-64 by changing their religion. When the Chinese invaded Kashgaria, this army deserted the son of Yakub Beg, Beg-Kuli Beg, and having seized the fort of Yangi Shar, surrendered to the Chinese, and at the same time returned to their former religion.

The traders and artizans usually settle in the principal fortified towns of the country ; in the Muhammadan portions of the towns they live in separate quarters ; but in villages they mingle with the natives ; the settlers live in scattered farmhouses in the vicinity of the larger towns. Out of the numbers given above, about 610 families live in the fortress of Yangi Shar and its suburbs, and in farmhouses and villages of the district. The rest of the Chinese population are scattered among the other towns of Eastern Turkistan as follows :—

				Houses.
Kashgar and district	..	..	..	150
Yangi Hissar	..	..	..	30
Yarkand	..	..	..	105
Khotan	..	..	..	44
Utch Turfan	..	..	..	30
Aksu	..	..	..	50
Kuchar	..	..	..	30
Karashar	..	..	..	45
Lob (Dural)	..	..	..	30

In addition to the above-mentioned nationalities there are in Kashgaria also from 470 to 500 families of Andijanis and foreigners. Andijanis, as the natives call the Sarts from Russian Turkistan, specially those from Ferghana. Some of them had come here previous to the time of Yakub Beg, some came with him, the remainder came later, as clerks and agents of Ferghana merchants. With a few exceptions, they are Russian subjects. Scattered among the more important centres of Kashgaria, the Andijanis are the principal agents of Russian trade with it, being middlemen among the natives, consumers of Russian productions, and traders from Ferghana and Semerechensk. Some of them own land, and are engaged in agriculture and gardening.

Then one must not forget the Indians, who mostly practise usury, the Kashmiris, Afghans, Gypsies and Jews, who are scattered among the towns of Kashgaria in inconsiderable numbers. The Russians in Eastern Turkistan (not counting the staff of the Russian Consul in Kashgar and his permanent Cossack guard, the officials of the Kashgar Customs, and the clerks of the trading firms) are merely travellers. Practically none of them are permanent residents. But in 1858 to 1860 a Russian village was founded on Lob Nor by the "Old Believers," who came apparently from Altai, from the sources of the Yenesi or Ulukem. This village, after it had existed for two years, was destroyed by order of the

Chinese Government, and the inhabitants, according to one authority, were forcibly carried off to Turfan, but according to another they voluntarily went towards the north.

Details with regard to the fluctuation of the population do not exist, as there are no registers of births or deaths. But there is no doubt that the population is increasing, as is shewn by the fact that new villages and settlements are springing up, and the older ones are becoming bigger. The variation in the population depends principally upon natural increase, the additions to the population from neighbouring districts being inconsiderable. If we omit the already mentioned immigration of the Dungans in Kara Kul, and some hundreds of families from the oases of Turfan and Lukchun, who have settled in the new town of Dural (Sin-Chen), then the yearly additions are limited to some tens of families of Chinese and Dungans, who immigrate into the Eastern districts of Kashgaria. Emigration is still very restricted. Emigration of the settled natives is limited by an order forbidding native women to leave the country; the nomads, as we have seen before, have considerable independence and freedom from taxation, which not only stops their emigrating, but often forms an attraction for the Kirghiz of the Russian Pamir and Ferghana districts.

RELIGIONS.

The bulk of the population are Sunni Muhammadans, but their religion sits very lightly on them. Even in the time of Yakub Beg the Mullahs did not have the predominating influence on the Government of the country, or on the life of the people, that they have in other Muhammadan countries.

The few Shias consist almost entirely of the Sarikol Tajiks, and the mountaineers of Shikhpoo, Pokhpoo, and Chipan.

The Mongols are Buddhists, and the Chinese are followers of Confucius.

The following table gives roughly the percentages of the population according to religions:—

				Per cent.
Sunni Muhammadans	..	..	..	96.0
Shiah Muhammadans	..	..	..	.8
Buddhists	..	..	..	2.8
Confucians	..	..	..	.4

LANGUAGES.

The whole of the settled population of Kashgaria speak the Uighur dialect of the Turki language. In this dialect are incorporated many old Persian, Arabic, Chinese, and Mongol words, but at

the same time the roots, form, and turn of the pure Turki tongue are preserved much better than in the dialects spoken by the Uzbegs of Russian Turkistan. There exist minor variations of the language in the different oases, but chiefly in the manner of speaking and pronunciation. The Yarkand and Khotan people, for example, speak quickly, clipping the terminations, and do not pronounce the letter "r"; the Kashgaris accentuate the "o". In general, the differences are so small that the natives of the most distant localities of Kashgaria can understand each other perfectly freely; the inhabitants of Russian Turkistan would understand most readily the Kashgar dialect.

The official language of the country is Chinese, and as the Chinese officials either are, or pretend to be, ignorant of the Turki language, they always employ Muhammadan interpreters.

The Mongols use the Mongol language which is common to the people of the whole of Mongolia.

CHAPTER III.

CLIMATE AND HEALTH.

[Temperature ; Prevailing winds ; Rainfall ; Diseases.]

THE climatic conditions of Kashgaria have not yet been sufficiently studied. Meteorological observations extending over several years have been carried out only in Kashgar. For the remaining parts of the country there are only the daily notes of travellers who visited them. In the mountain girdle of Kashgaria no systematic observations have been made. Consequently the materials available do not give an accurate picture of the climatic conditions of the whole country, but only allow us to conclude that on the plains, its climate, like that of most continental countries, is very hot in summer and severe in winter.¹ The rainfall is extremely scanty, and the air very dry. The winds in the spring are very strong, and usually begin about 11 A.M., and last till the evening. Dust storms are frequent.

TEMPERATURE.

Observations in Kashgar, for some seven years, give the following as the mean monthly and annual temperatures of the air (in Fahrenheit degrees) :—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Mean maximum	32.4	45.1	56.2	71.6	80.8	89.9	91.5	88.1	81.6	68.7	52.0	36.6	66.2
Mean minimum	12.5	22.5	36.1	49.0	58.1	65.6	68.6	65.3	56.9	42.2	28.8	16.4	43.5

The seasons of the year are divided roughly as follows :

In the mountain girdle of Kashgaria spring begins late. In the northern valleys of the Sarikol range deep snow lies until the end of March, and sometimes till the beginning of April, and snow-storms do not cease till the end of April. On the plains spring begins considerably earlier, in Northern Kashgaria in March, in the Yarkand oasis in the end of February, and in Southern Kashgaria even in the middle of February ; the lakes and rivers only open in the beginning of March, and then verdure begins to appear. At the end of March, in the plains, fruit trees are almost everywhere in flower.

In the plains the arrival of spring, and the commencement of the thaw, is characterised by stronger winds, which sometimes

¹ Sven Hedin, Central Asia and Tibet, Volume I, page 305, records a minimum temperature near Cherchen on the 28th January 1900 of 26.0° F.

change into storms with the velocity of from 75 to 95 feet a second. The winds are usually accompanied by dust storms. Towards the middle of March the winds begin to abate, warm weather becomes settled, and slight rains fall.

In the mountain girdle we may consider the summer as commencing in May. In the course of this month the trees bud, the grass springs up, and the weather becomes warm and even hot, cooled however by fairly frequent rain. In the plains the summer commences considerably earlier. At the end of April the maximum temperature of the air is as much as 88°. The months of May to August, inclusive, are extremely hot. The hottest month is July. The mean temperature, according to the preceding table, is about 80°, but the maximum observed at Kashgar was 104.2°. In some years it is considerably higher, as temperatures of 102° are often observed in June.

In the oases the presence of trees and the strong wind considerably reduces the heat, lowering the temperature about 10 degrees in comparison with that of open places, but in the deserts the maximum temperature should be considerably higher.

In the Takla Makan desert, in the month of March, General Pevtsoff observed a temperature, of the air, of 81°, and at the same time the temperature of the sand was 140°, and in Southern Kashgaria Captain Roborovski in April observed a temperature of the sand of 152½° in the sun. In June and July the surface of the "sai" and sands of the Kashgarian deserts becomes hotter and hotter, and consequently travelling by day becomes disagreeable, even for the natives who are accustomed to the heat. It is noticeable also that in Kashgaria, in consequence of the united action of the direct rays of the sun and the heat reflected from its dry, saline and sandy soil, people become exhausted in the sun more rapidly, even at a lower temperature, than they do in India or in other hot countries. In the wooded and marshy belt of the valleys of the Tarim and its tributaries, the suffering caused by the heat is increased by myriads of mosquitoes, midges, and gadflies.

PREVAILING WINDS.

In summer in the plains rain occasionally falls, but so seldom and so scantily that it practically produces no freshness. At this time there is rarely any wind, but it sometimes comes in short fierce storms. In August, September, and October almost everywhere on the plains there is delightful weather, calm, moderately warm, and clear. In the hills at this time there is also excellent weather. At the end of September and beginning of October in the high mountain valleys of the Sarikol there are occasional falls of snow, but it does not last long, and only in deep ravines which are hidden from

the sun. In general, autumn may be considered as the best season of the year in Kashgaria. At the end of October the frosts begin on the plains. November may be considered as the beginning of winter on the plains, although in the course of this month clear, calm weather prevails. In the beginning of December, first the ponds and lakes, and then the rivers are frozen over, and cold winds begin to blow, accompanied by dust storms. In the middle of December, and sometimes even later, the first snow falls, but it soon melts; in some years there is absolutely no snow. In those winters when there is most snow it does not lie more than a week, its thickness rarely exceeds 8 inches, and usually is only about 4 inches.

In the mountain girdle of Kashgaria there are frequent snow-storms. The nomads, who pass the summer with their flocks on its high mountain pastures, have come down by the end of September, and they spend the winter in the bottoms of the valleys, which they only quit at the end of April or beginning of May. The nomads of Southern Kashgaria, for reasons which will be explained below, pass the greater part of the year at considerable altitudes. Speaking generally, the winter in Kashgaria is severe. The lowest temperature observed in Kashgar in the winter was 77° F. Thus the absolute annual range of temperature of the air at Kashgar is 111.9° . In Southern Kashgaria the winter is very severe (*vide* foot-note, page 102).

In Kashgaria the wind blows from all directions, but the prevailing wind over the whole of Kashgaria—hills and plains—is from the north-east. It is most frequent in the summer months, bringing with it sand storms and occasionally rain, but it sometimes occurs also in early spring. In the plains there are often west and south-west winds; after these there are often in the western half of the country north-west winds, and in the eastern half of the country north-east winds. But the most prevalent wind in the plains is the westerly, as may be seen from the slopes of the sand dunes and hillocks, and also from the slope of the trees, leaves and stumps, all of which have a considerable inclination towards the east. South and east winds occur comparatively seldom.

In summer, in Southern and Western Kashgaria, there are frequent winds blowing from the deserts of the Takla Makan, which lower the temperature in the foothill tracts by some 5° . The winter winds of Kashgaria, which blow from the frontiers to the centre, and the opposite winds which blow from the centre to the frontiers, are doubtless caused by the peculiarity of the mountain system of the country, and are winter cyclones and anti-cyclones. In the highlands of Southern Kashgaria the winter south-west winds, which

sometimes blow for a whole month, are always accompanied by clear skies and a considerable rise in the temperature of the air; consequently the inhabitants of the Russian range, the Kharangu Tagh and the Tekelik Tagh, leave the lower valleys where they spend the cold weather, and ascend with their flocks to the tops of the ranges, at a height of from 10,000 to 12,000 feet, and there remain some three or four weeks, until there is a change in the wind. In Kashgaria the wind blows mostly by day. Beginning about 11 A.M., it continues until about 5 P.M., at times becoming a little quieter. During the evening, night, and morning there is a calm, and in the morning the air is clear.

The summer, and especially the spring winds, which often change into storms, are accompanied by dust-storms. The thick loess dust and sand, which are carried by the wind, darken the atmosphere to such an extent, that sometimes at a distance of only 20 or 30 paces it is impossible to see even large objects like trees, houses, etc. The dust-storms are often accompanied by rain-storms, because the presence of dust in the atmosphere tends to condense the vapour which is in it. The combination of dust and rain storms is more frequently seen in the spring and autumn months, *i.e.*, in those months when the air is most moist. After a storm there remains in the air for some days an extremely fine mineral dust, which, as it settles, covers the surface of the ground with a thin layer. This, which is called by the natives "topa yadgi," appears to be characteristic of Kashgaria. The dust forms an excellent manure for the fields.

RAINFALL.

As the winds are frequent and calms are rare, dust-storms are a very frequent phenomenon in Kashgaria. There are usually not more than 100 bright days in a year; and days when the atmosphere is quite clear, and it is possible to see distant objects, are very rare. Consequently heliographs would be of little use in Kashgaria. The paucity of the rainfall, and the unusual dryness of the atmosphere, are the distinguishing features of the climate of Kashgaria. The quantity and distribution of the rainfall at Kashgar may be seen from the following table which is based on about seven years' observations at the British Consulate:—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Average quantity of rain or snowfall in inches.	'31	'04	'21	'20	'79	'40	'34	'71	'29	'03	'02	'18	35.2
Average number of days on which rain or snow fell.	1.1	1	9	10	13	9	8	20	8	1	1	4	9.4

Rain in the plains falls mostly in April, May, and August, and occasionally in summer, sometimes consisting of short sharp storms which wash away the houses in the towns and villages. But generally the air of the Kashgarian plains is extremely dry.

In the mountain belt of Kashgaria much more snow falls, and the rain showers are more frequent and of longer duration, the greatest quantity falling in June, but even here the total quantity of rainfall is probably much less than that in Russian Turkistan:

The north and north-west winds, in travelling over the plains of Siberia and Central Asia and the mountains surrounding Kashgaria, lose most of their moisture, and arrive here almost dry, bringing to Kashgaria an insignificant amount of rainfall. The atmospheric currents from the Indian Ocean leave the greater part of their moisture, in the shape of snow and rain, on the southern and south-western slopes of the Himalayas and the Hindu Kush; and according to the observations of Prjevalski only in the mountains to the south of Keria is the influence of the south-west Indian monsoon felt in the plentiful rains which fall during June, July, and sometimes to the end of August. Hail falls very rarely in Kashgaria, and in many places the inhabitants are quite unacquainted with it.

The best time for military operations in Kashgaria is the autumn, and the beginning of winter, up to the commencement of the frosts. The climatic conditions of the country may be considered quite favourable to the health of the inhabitants. Although in some places there is much sickness, it must be ascribed not so much to the climate, as to insufficient housing accommodation, the very insanitary conditions of the villages, poverty, sexual excesses, and the use of *charas*.

DISEASES.

There is much malaria. The principal cause seems to be the canal and pond system of water-supply Malaria. in the towns and villages. The towns of Yarkand and Aksu, in the neighbourhood of which are extensive areas of paddy fields, have a specially severe type of fever, and a high percentage of cases.

Rheumatism (muscular and osseous) is caused chiefly by living in damp and badly floored dwellings, and Rheumatism. by the habit of the natives of warming themselves in damp clothes before the stoves. Rheumatism is especially prevalent in those towns and villages where "mata" is produced, as the bleaching of it, which is carried on chiefly in the autumn, necessitates the workers standing for some hours in water.

Intestinal diseases are caused by the use of bad water, and in summer by the inordinate consumption of melons and other fruits. Gastritis is often

seen among *hasish* smokers, when their physique has been exhausted.

Inflammation of the lungs occurs fairly often in spring and autumn, when there are sharp variations of temperature.

Amongst these, eczema and diseases of a parasitical nature are most prevalent—itch and ulcers,—caused by the uncleanly habits of the people.

Cataract and conjunctivitis are most prevalent. The principal causes are dirt, the fine saline dust in the air, and the unsatisfactory ventilation of the houses.

Secondary and tertiary syphilis are very frequently met with in patients of all ages, even children. In

Venereal diseases. the course of 18 months not a single case of primary syphilis was observed at Kashgar. Captain Deasy states that venereal disease affects, though not with great virulence, more than nine-tenths of the population.

Goitre is most prevalent in the Aksu, Yarkant, Karghalik, and Khotan oases. The thyroid gland reaches enormous dimensions; the disease is incurable, and is accompanied, as in other countries, by respiratory and circulatory troubles and a loss of physique. The causes of the disease are not known, but it is often attributed to the use of bad or hard water. It has been noticed that persons who come from Russian Turkistan often contract the disease about three or four years after their arrival in Kashgaria.

Infectious diseases are very rare among the natives of Kashgaria, and then generally are isolated imported cases. They very rarely take an epidemic form. An exception to this was small-pox, which was prevalent all over Kashgaria during the whole of the year 1900, summer and winter. At Lob Nor it took an epidemic form. The mortality from small-pox, especially among children, is enormous owing to the complete absence of medical assistance.

In general, however, the health conditions of Kashgaria may be considered satisfactory, and as a proof of this it may be mentioned that the Russian Consular guard of 50 Cossacks, during 18 years at Kashgar, in spite of the far from satisfactory nature of their quarters, had only four deaths, and these were from purely accidental causes.

The following notes by Dr. W. H. Bellew, C.S.I., Medical Officer to the Yarkand Mission in 1873, are interesting:—

“ During our stay in the country we had many opportunities of judging of the prevalent diseases among the people, and these were extended by the establishment of a charitable dispensary in connection with the Embassy. Subjoined is a classified list of the numbers of each disease treated in the dispensary.¹ It speaks for itself, and needs no special analysis, beyond a few general remarks on its more characteristic indications, as exponents of the health state in Western Kashgaria during its most rigorous season of cold—a season which, with the preceding months of autumn, is considered the most healthy portion of the year.

“ The rarity of febrile diseases is very notable, and as far as I could ascertain the people of Western Kashgaria enjoy an uncommon immunity from this class of diseases. The eruptive fevers of childhood are known, but rarely prevail as epidemics, and small-pox is deprived of much of its destructive violence, owing to the free exposure to air and the isolation of the sick. The people have a greater dread of this disease than of any other, and on its appearance among them, they immediately vacate the house or camp, leaving the afflicted with a single attendant and do not return until 40 days have elapsed. Malarious fevers, it would appear, are hardly known, though a form of typhoid or enteric fever is said to prevail in the early spring and winter seasons. Cholera is unknown in the country, but a fatal epidemic, which by some is described as that disease, and by others as a malignant form of typhoid, is said to have visited Khotan in 1872 as an importation from Kashmir. It did not spread beyond the city, and since its cessation has not again reappeared. The scattered tenements of a settlement are usually so isolated by a surrounding of fields, orchards and plantations that the spread of infectious diseases from one to the other is reduced to a minimum, whilst the separation of each settlement from the next by a strip of arid desert secures it an almost complete immunity from invasion by disease from its neighbour.

“ The frequency of diseases of the eye, and particularly of the internal humours, is very remarkable, and is mostly attributable to the combined effects of climate and soil. The extreme dryness of the atmosphere, which in April shows a difference of 26° between the indications of the wet and dry bulbs of the hygrometer, coupled with the intense glare of the sun from a white sandy saline soil, and the particles of dust constantly set afloat in the air, must be a prolific source of discomfort, and a severe trial of the powers of so delicate an organ.

¹ *Vide* pages 111 and 112.

"Another set of diseases whose origin is due to effects of climate are those of the respiratory system, and the frequency of their prevalence in a chronic form is a fair index of the severity of the winter season. With this category too may be included the muscular forms of rheumatism.

"More notable than any of the above, as much on account of its extraordinary prevalence as on account of its limitation to certain localities, is the disease called goitre or bronchocele. It is met with in all the country from Kashgar to Khotan, but attains its maximum of frequency and development at Yarkand. Here it is the exception to escape this hideous deformity, and most inconvenient disease. It is seen in all forms and stages of growth, and in all classes and ages—from the teething infant to the toothless grey beard,—and it does not appear materially to shorten life. In examining promiscuous groups of the people about our Residency and in attendance at the dispensary, I, on different occasions, counted 7 out of 10, 11 out of 13, 5 out of 7, 3 out of 5, 9 out of 15, and on one occasion an entire group of 7 goitrous subjects. Their numbers in the bazar crowds is surprising, and the enormous development and deformity in some cases are as astonishing as they are repulsive. I did not see a single case of cretinism, though I was told that idiocy was not uncommon amongst children, in whom the disease attained a rapid development. The people call goitre "bucac" or "bughac," and attribute it to the water they drink. The city, where the disease is far more common than in the rural districts or hills, is supplied with water by canals from the Yarkand river, which takes its rise, and in its upper course flows, amongst mountains of micaceous schist and slate shales. On the plain, too, it flows over a sandy soil largely mixed with mica, as do the canals drawn from it. These last are conducted into the city, and there from time to time replenish a number of uncovered tanks or reservoirs sunk in the loess soil of the ground for the supply of the citizens. Their water is more or less stagnant and full of conervæ, and all sorts of impurities derived from the bordering roadways. Some of the people more than usually affected by this disease applied at the dispensary for relief, but the great majority hardly considered it a disease, and none but children in whom the growth was incipient were treated with any hope of benefit.

"Another class of diseases owing their origin to the habits of the people, as distinct from the effects of climate, deserves a brief notice, inasmuch as they afford a pretty correct idea of the state of morals, domestic habits, and vicious practices among the people. Venereal affections, though not uncommon, are still far less frequent than the known lax morality and promiscuous intercourse of the sexes

would lead one to expect, unless, indeed, such cases have not so freely shewn as others free from any stigma of reproach have done. But such as were seen included some of the most repulsive and destructive forms of secondary syphilis, aggravated apparently by abuse of mercurial remedies.

“The frequency of skin diseases may be recognized as an exponent of the dirty habits of the people, and their little habitude to ablution. But the last and most prevalent affliction we need here notice is the dyspepsia produced by the abuse of opium and Indian hemp. Amongst the city people everywhere it is met in a very aggravated form, and marks very surely the destructive effect of these poisons.”

Extract from the record of sick, out-door and in-door patients, treated at the dispensary of the Kashgar Embassy from the 1st of November 1873, at Sanju, to the 24th May 1874, at Kugiar.

GENERAL DISEASES.		<i>Diseases of the heart.</i>	
Agues	.. 20	Palpitation	.. 5 —5
Rheumatism	.. 83	<i>Diseases of thyroid glands.</i>	
Lumbago		Goitre	.. 168
Syphilis, primary	.. 16	Others	.. 19 —187
Do., secondary	.. 68	<i>Respiratory system.</i>	
Other diseases	.. 93 —303	Bronchitis	.. 328
<i>LOCAL DISEASES.</i>		Asthma	.. 103
<i>Nervous system.</i>		Pleurisy	.. 32
Neuralgia	.. 89	Others	.. 12 —475
Other diseases	.. 34 —123	<i>Digestive system.</i>	
<i>Diseases of the eye.</i>		Decayed tooth	.. 86
Conjunctivitis	.. 321	Relaxed tonsils	.. 105
Cataract	.. 33	Dyspepsia	.. 378
Other diseases	.. 100 —454	Dysentery	.. 33
<i>Diseases of the ear.</i>		Colic	.. 28
Inflammation	.. 37	Haemorrhoids	.. 63
Others	.. 23 —60	Others	.. 133 —826
<i>Diseases of the nose.</i>		<i>Urinary system.</i>	
Polypus	.. 26	Gonorrhœa	.. 58
Others	.. 6 —32	Others	.. 9 —67

Extract from the record of sick, out-door and in-door patients, treated at the dispensary of the Kashgar Embassy from the 1st November 1873, at Sanju, to the 24th May 1874, at Kugiar—contd.

LOCAL DISEASES— <i>contd.</i>		<i>Injuries.</i>	
	<i>Generative system.</i>	Various	18 —18
Spermatorrhœa ..	37		
Amenorrhœa ..	12	<i>Surgical operations.</i>	
Others ..	14	Cataract excision ..	9
	—63	Teeth extraction ..	34
	<i>Diseases of bones.</i>	Others	28 —71
Periostitis ..	13		
Others ..	10	<i>Congenital deformity.</i>	
	—23	Harelip, etc.	6 —6
	<i>Cutaneous system.</i>		
Pityriasis capitis ..	25		
Eczema ..	15		
Ulcer ..	206		
Itch ..	173		
Others ..	182		
	—601		
	<i>Debility, general.</i>		
From opium smoking ..	19		
From Indian hemp smoking ..	25		
	—44		
	<i>Intestinal worms.</i>		
Ascarides and tape-worm ..	12		
	—12		

CHAPTER IV.

RESOURCES.

[Agriculture ; Animals ; Transport ; Productions ; Industries ; Trade.]

AGRICULTURE.

THE principal occupation of the settled inhabitants of Kashgaria is agriculture, after it come cattle-breeding, market gardening and other branches of farming, handicrafts and trade.

Agriculture in Kashgaria is carried on under unfavourable conditions, principally on account of the want of land suitable for cultivation. As we have seen, the greater part of the surface of the country is composed of mountains, and saline, sandy, rubble-strewn deserts. The deserts, owing to the nature of their soil and the want of water completely exclude any possibility of agriculture : in the mountains, soil suitable for agriculture is only met with in small patches, in the high upland valleys of Sarikol and Raskam, and in the wider parts of the river ravines. Agriculture is limited to the oases, and the area of the latter consists of only 1.75th of the total area of the country. The amount of agricultural land (including irrigation channels, roads and boundaries) per house in the oases is roughly as follows¹ :—

In the oases of Kashgar			4.05 acres per house.
Ditto	Yangi Hissar	..	3.78 ditto.
Ditto	Yarkand	..	4.59 ditto.
Ditto	Karghalik	..	5.13 ditto.
Ditto	Khotan	..	8.19 ditto.
Ditto	Keria	..	18.90 ditto.
Ditto	Nia	..	13.50 ditto.

There is no information available regarding the other oases, but we may assume that the area of land per house does not differ much from the above. Excluding the area occupied by buildings, gardens, roads, etc., the arable land in the first four oases does not exceed from $2\frac{3}{4}$ to $3\frac{1}{2}$ acres per house ; in the oases of Khotan, Keria, and Nia, it is perhaps rather more, but the soil there is less fertile.

In order to increase the area of land suitable for tillage, the people in places cleared away the forest belt, and ploughed up the loess hillocks on the borders of the Takla Makan, but unfortunately the natural conditions of the country place a limit to the utilisation of these resources. The clearing of the forests threatens the existence of the oases themselves, as it results in an advance of the sands of the neighbouring deserts. The great obstacle to the increase of the area of arable land is the difficulty of watering the new parts.

¹ Kashgaria, page 286.

In the oases of Yangi Hissar and Kashgar other measures are practised. In the autumn, the water which is not needed for the fields is led on to the sand and inundates the hollows between the sand dunes. The fertile silt brought by the water gradually fills up these hollows, and their edges are planted with willows and other quick-growing trees and bushes, in order to protect them from being overwhelmed by the sand. In this manner, in the course of three or four years, a belt of fertile land is formed. Moreover, the application of this method demands considerable expense in the making of channels, and is also not everywhere possible on account of the varied natures of the localities. The nature of the soil and the climatic conditions in Kashgaria are less favourable for agriculture than they are in Russian Turkistan.

Deposits of pure loess are met with here and there on the borders of the Takla Makan in the shape of loess hillocks, but they are not as large as the loess areas in Central China and Western Turkistan. The best soils in the oases of Kashgaria are the loess, and the sandy, clay, alluvial soil of the irrigated areas. In the oases of Southern Kashgaria, commencing with Khotan, the fertility of this soil is greatly reduced by a considerable admixture of gravelly sand. In the oases of Khurla and Karashar the loess and alluvial deposits are replaced by a brown, decomposed, and very light soil. Owing to the dryness of the climate of Kashgaria, agriculture is possible only by artificially watering the crops. Dry cultivation (that is, crops which depend upon rain only), which is widely used in Russian Turkistan, is unsuited even for the high mountain valleys of the Sarikol, as the rainfall there is considerably less than that, for example, in the Ferghana basin. Another unfavourable circumstance for agriculture is the non-coincidence of high water in the principal rivers of Kashgaria with the time for sowing and watering the crops.

The irrigation system of the country, which has existed from ancient time, is extensive, but is very primitive and cannot be considered perfect. The water-wheels, pumps, and other appliances, which are commonly used in Central China, and which convey water on to the fields when the rivers are at their lowest level, are here unknown, as is also the Persian wheel, which is widely used in Eastern Persia, and which can raise water from the deepest levels.

The irrigation system of each oasis consists of some large canal led out from the rivers by means of dams, and which, dividing up into a number of small channels, bring water directly on to the fields and gardens. This system, in consequence of the low level of the rivers in early spring, cannot give the fields a sufficient supply of water and secure them from drought.

The food grains mostly cultivated in Kashgaria are, maize, wheat, barley, *jowari*, common millet, rice, and peas. Of these maize predominates, it probably occupies no less than 50 % of the total area of arable land; then follows wheat, about 30 %. Barley is little sown in the oases, as the cattle are generally fed on maize. *Jowari*, millet and peas are also little sown. Rice is only cultivated in those places where there is an abundance of water, such as the valley of the Yarkand river near Yarkand, the Kizil Su below Kashgar, and the Aksu river close to Aksu. The best rice is grown in the oasis of Aksu.

In the high valleys of Raskam and Sarikol (Tagharma, Tash Kurghan, Vacha, and Mariong), wheat, barley, and peas are grown; at altitudes of above 10,000 feet (for example at Dafdar in the Tash Kurghan valley) only peas and poor Himalayan barley are grown, wheat does not flourish.

The average yield of the various grains in the principal oasis of Kashgaria is roughly as in the following table:—

Oasis of	Maize.	Wheat.	Barley.	Rice.
Kashgar	30 Fold.	11 Fold.	12 Fold.	15 Fold.
Yangi Hissar	40 "	9 "	15 "	..
Yarkand	40 "	15 "	16 "	18 Fold.
Karghalik	36 "	14 "	15 "	16 "
Khotan	30 "	13 "	14 "	14 "
Keria	28 "	14 "	12 "	11 "
Aksu	35 "	15 "	16 "	15 "
Utech Terfan .. ..	..	14 "	..	..
Khuria	30 Fold.	12 "	..	8 Fold.
Karashar	35 "	12 "	..	..

This table shows, that with the exception of maize, which grows well everywhere, the yield of other sorts of grain is only moderate. The yield is affected also, besides the above mentioned conditions of soil and climate, by the system of agriculture, the implements of husbandry, and the want of manure. The duration of the hot summer enables two crops to be obtained in the year. After barley, they usually sow either barley again or maize and wheat: after wheat, maize is almost always sown. A second crop is only planted on the more fruitful areas, the less fruitful are only sown once. The implements of husbandry are very primitive—a wooden plough with an iron share is used, which only breaks up the soil to a trifling depth. Harrowing is effected with rough harrows and ordinary rakes.

For manure, ordinary dust and mud from the roads and streets, mud thrown out when the canals are being cleaned, material from

old ruined buildings, and dung are used. But of dung, in consequence of the small number of cattle owned by the inhabitants, there is very little. The primitive loess, which would make an excellent mineral manure, is little used. Under these conditions the fertility of the soil is becoming perceptibly reduced, and is far below the normal which might be obtained by suitable manuring.

In the Sarikol valleys the average yield of grain is considerably lower—wheat gives about 7 fold, barley about 7 fold, and peas from 7 to 8 fold.

There is no accurate information available as to the total yield of grain in Kashgaria, because crop records are neither made by the administration, nor by the people themselves. But as the land tax is nominally one-tenth of the total yield of the land, it is possible to form an approximate estimate of the total yield from the amount of the land tax. The following is the official Chinese record of the land tax for the year 1900, which had to be paid half in wheat, and half in maize:—

Locality.	IN 1900 LAND TAX WAS		ASSUMED YIELD @ 10 TIMES TAX.		
	“Dans” = 250 lb.	Pounds averdupois.	Total lb.	Per head pounds.	Per acre bushels.
1	2	3	4	5	6
Kashgar ..	17,228	4,307,000	43,070,000	135	2·0
Yangi Shar ..	18,140	4,535,000	45,350,000	200	
Yangi Hissar ..	10,822	2,705,500	27,055,000	220	2·7
Maralbashi ..	1,808	451,500	4,515,000	225	
Bai ..	9,706	2,426,500	25,265,000	..	3·5
Yarkand ..	18,285	4,571,250	45,712,500	222	1·1
Karghalik, Guma, Sanju, etc.	15,200	3,800,000	38,000,000	245	3·5
Khotan ..	25,189	6,297,250	62,972,500	350	3·5
Keria ..	8,210	2,052,500	20,525,000	390	2·8
Karashar ..	6,254	1,563,500	15,635,000	184	4·7
Kuchar ..	13,900	3,475,000	34,750,000	535	1·6
Aksu ..	19,096	4,774,000	47,740,000	251	
Uteh Turfan ..	9,470	2,367,500	23,675,000	1,127	2·6
Whole country ..	....	....	434,265,000	267	3·0

From column 5 of the above table it is manifest that of wheat and maize (80 % of the total land under crops—*vide* page 115) there is only 267 pounds per head of the population. If we add 25 % to this, we get 331 pounds as the total grain per head per annum—less the amount consumed by animals. As this is quite insufficient for a people whose staple food is grain, and as none is

imported, it is probable that the grain supply is greater than these figures would make out. We may, however, assume that there is no great surplus of grain available because (a) the country is poor, and (b) they have no need to keep up a large reserve against famine, as all the fields are irrigated and the crops therefore practically certain.

The production of food grains is said to be limited by the fact that the Chinese Government have forbidden the export of every sort of grain. That the country could produce much more is evident from column 6, from which it would appear that not more than a quarter of the land can be under grain, as land may be expected to give at least 12 bushels of wheat to the acre.¹

In 1900 the grain produced in Sarikol was only sufficient for the needs of the settled population. The nomads and semi-nomads get the bulk of their grain supplies from the oases.

Lucerne is grown, but in small quantities, as the horses of the Chinese troops and of the population are accustomed to feed on straw.

Cotton is grown almost everywhere, but principally in the oases of Aksu, Kashgar, Yarkand, Khotan, and Keria. That from the plantations of

Cotton.
the Keria oasis has the best staple. Some of this is used by the local weavers, and some is exported to Russian Turkistan. In 1900, 378 tons were exported, having a value of about £17,000. This figure has been greatly exceeded of late years. In 1914 the value of the raw cotton exported to Russian Turkistan was over £100,000. Mr. Macartney estimates the total annual production of cotton at 16,000 tons. Cotton presses have recently been established at Kashgar and Yarkand.

Hemp is cultivated in the Yangi Hissar, Yarkand, and Karghalik oases. From the resin of this plant a drug called *charas* is produced which is used

Hemp.
by the local population, and also finds a good sale in India, Afghanistan and (contraband) in Russian Turkistan. No special ground is allotted by the cultivators to the hemp plant, which is invariably grown along the borders of irrigation canals or on the edges of fields, more or less as a protection for crops occupying the central space. It is extremely hardy and needs no care. Its fibres are employed in the making of ropes, and its seed furnishes an oil useful for lighting and cooking purposes.

Sesame and tobacco are grown everywhere; from the seed of the Sesame and tobacco.
sesame an oil is made, which is used for food and for lighting. The tobacco is not

distinguished by any great excellence, and is all consumed locally.

¹ The average yield per acre is,—in England 30 bushels, in Minnesota 18, in France 15½ and in the Punjab 13.—(*Enc. Brit.*)

Flax and poppy are cultivated in small quantities, especially in the oases of Southern Kashgaria ; opium is made from the poppy, which is very extensively used by the Chinese.

Melons, pumpkins, gherkins, cabbage, beans, haricot-beans, beet-root, turnips, radishes, carrots, onions, fennel, parsley, tomatoes, peas, spinach and pomedore are successfully grown. Potatoes are only grown in the oases of Yarkand, Yangi Hissar, and Utch Turfan, whence they are sent to the neighbouring districts. Market-gardening is scientifically carried on by the Dungans and the Chinese colonists, who, besides the vegetables mentioned above, also cultivate various kinds which are peculiar to China, such as long thin cucumbers, cauliflower of various kinds, salads, knolkole, etc.

Fruit gardens flourish in Kashgaria. In the suburbs of the towns are large gardens belonging to the wealthy men of the place; in the villages, almost every house is surrounded by a small garden; besides these, the water channels and the boundaries of the fields are often planted with fruit trees. Among the fruits the first place as regards quantity is taken by apricots, then grapes of various kinds, mulberries, another kind of mulberry suitable for silk-worms, peaches, apples, pears, walnuts, wild cherries, a special kind of date, white cherries, pomegranates, quinces and figs. Kuchar is celebrated for its pears, Sanju for its walnuts, Khotan for its dates and mulberries. The produce of the gardens is mostly consumed on the spot, and serves as an addition to the ordinary food of the people. Wine is made from the grapes; and fresh and dried fruits are exported to Russia to the extent of about 120 tons annually.

Liquorice. The liquorice root grows as a weed all over Kashgar.

The oases of Southern Kashgaria, especially Khotan and Chira, were long celebrated for their silk. The silk is partly used up in the local manufactories, and partly exported abroad in a raw state. Mulberry trees are plentiful also in Karghalik, Yarkand, and Kashgar, but they are not used for sericulture. In 1905 raw silk to the value of Rs. 6,00,000 was exported to India. Normally the Indian export is about 3 lacs. There is a considerable export of raw silk to Andijan.

Wool is produced to a considerable amount by the flocks of sheep. It is partly manufactured into felts, carpets, etc., and partly exported in a raw state.

A small quantity of camel's hair is obtained, mostly near Kashgar.

Camel's hair.

The Kirghiz manufacture the hair of their camels into ropes for their own use.

The isolation of Kashgaria, and the peculiarities of its climate, especially the dryness of the air, have some effect on the flora and fauna of the country. In Kashgaria are found species of the animal and vegetable worlds which do not exist in the neighbouring countries, and on the other hand many animals and vegetables, which are widely diffused there, are not found in Kashgaria.

The flora of Kashgaria is not distinguished by the richness and variety of its species, especially on the plains. We will not enumerate all the botanical species which are to be found, but will only mention those which serve as food for man or cattle, as fuel, or building materials. In the river valleys of Kashgar reeds, liquorice root, hemp, thistles, camel thorn (*Alhagi camelorum*), "sugak" (*Lycium*), and clematis grow in abundance. On the loess hillocks there is tamarisk ; this is found in large groves, and attains a height of 20 feet, and a thickness of 5 inches at the root. In the oases, besides fruit trees, there grow "jida" or Babylonian willow (*Elaeagnus sp.*), white acacia, willows and two sorts of poplar—the heterophyllous poplar (*Populus diversifolia*) or *tugrak*, and the pyramidal poplar. All the roads between the towns and chief villages and the banks of irrigation canals are planted on both sides with willows and these two species of poplar ; and the woods of the Kashgarian plains consist of poplar. The *tugrak* is indigenous only in Central Asia. It attains a height of from 70 to 80 feet and a breadth of from 14 to 16 feet, some specimens have even been found with a breadth of 28 feet. Its stem is covered with bark in which are long deep cracks. On some specimens are found large outflows of sap from which the natives make small utensils. The leathery leaves of the *tugrak*, which dry on the trees, are broken and carried away by the wind, and consequently in the Kashgarian woods we do not find the usual layer of decaying vegetation. On the fractures of branches of the *tugrak* there is formed a considerable deposit of salt mixed with exuded sap. From this the natives prepare a sort of yeast for their dough. Besides the numerous species of trees mentioned, the elm is found in the oases of Karashar and Khurla only ; it does not grow south of 41°. N.

In the deep ravines of the rivers, near the foot of the mountains, the *tugrak* is seldom seen ; here bushes predominate,—wild roses, "oblepiki" and sweet willow—and there are large tracts of "chia"—varieties of feather grass (*Lasiagrostis spl.*). On the foothills grow wormwood, mountain shrubs, the mountain pine and "kharmyk"

(*Nitraria shoberi*). Saksaul (*Holoxylon ammodendron*), which is so widely diffused in Central Asia, is seldom met with here, and is only found in a few places in the south-east of Kashgaria.

Information regarding the vegetation of the mountain girdle of Kashgaria has been already given in the description of the mountains. To avoid repetition, we will merely mention here that the vegetable world is almost identical on the hills of Northern and Western Kashgaria, but on the southern frontier there is a sharp difference between separate districts. According to the observations of all explorers, the quantity of rainfall in the Kuen Lun mountains diminishes considerably from the south-west to the north-east, and this distribution of the rainfall has a powerful effect on the flora of the mountain belt, which gradually becomes poorer in the same direction. The fir, juniper groves, and thick bushes which abound on the hills of the Tiznaf basin, disappear as we go to the north-east. Even in the hills to the south of Keria the bushes have become very thin and monotonous, although the alpine meadows are still good. To the east of the Keria river, even the meadows become poorer, changing in the Altyn Tagh and Tokus Davan hills into occasional clumps of stunted shrubs, wormwood, sweet willow and the cruel Tibetan spear-grass.

ANIMALS.

Cattle breeding in Kashgaria is only extensively practised among the Kalmuks of the Karashar province, where there is an abundance of excellent pasturage in the valleys of the Great and Little Yulduz. It is also carried on by the Kirghiz and Tajiks in the mountains, in the submontane tract of Southern Kashgaria, (where they can avail themselves of the pasturage in the Kuen Lun mountains), in the wooded tracts along the course of the Khotan, Keria, and Cherchen rivers, and lastly in the Maralbashi district, where there is an abundance of *kamish* reed. In the remaining oases of Kashgaria there is not much cattle-breeding, owing to the want of pasturage.

Of domestic animals, horses, cattle, donkeys, sheep and goats are everywhere kept. Camels are common at, and to the west of, Kashgar. Mr. Macartney estimates that there are some 20,000 within the jurisdiction of the Taotai of Kashgar. The Chinese keep pigs; and mules, of good quality but in small numbers, are brought from internal China. Yaks are kept in the mountain valleys of Sarikol and Raskam. They are about the size of a small ox and are very hairy. They are accustomed to very high altitudes, and die in the slightest heat. They can carry four maunds each, and are very slow, but extremely sure-footed.

Of the various breeds of horses, the Mongolian (Karashar) is the best. A horse of this breed, although not of large size (13 to 14 hands), excels in speed, strength and endurance. They are used as remounts by the Chinese cavalry quartered in the country. The settled inhabitants and the Kirghiz keep horses of the Kirghiz breed, which are small and not showy, but strong and specially suited for the difficult mountain roads. In the larger towns of the country Tibetan ponies and imported Badakshan horses are found.

The cattle are small and are bred chiefly for milk and field work. The sheep are of two kinds, a fat-tailed species which is met with everywhere, and a long-tailed, short-haired breed which is found chiefly in Southern Kashgaria.

Donkeys, in consequence of their docility and the cheapness of their keep, are almost indispensable to every farmer. They are used for riding, and as pack animals.

There is no information available as to the numbers of domestic animals owned by the inhabitants of Kashgaria as a whole. With regard to Karashar there is evidence that among the Kal-muks there are rich men who own 20 to 30 camels, 200 horses, 25 to 30 head of cattle, and 1,000 sheep each. The ordinary Kal-muks own on an average, per house, 2 or 3 camels, 10 horses, 1 or 2 cattle, and about 100 sheep. In 1900 the settled population of Sarikol and Yangi Hissar owned on an average:—

Per house.		In Sarikol.	In Yangi Hissar.
Horses	..	2.2	0.8
Camels	..	0.7	0.03
Cattle	..	4.3	2.5
Sheep and goats	..	71.9	11.2
Donkeys	..	2.0	2.0
Yaks	..	11.3	....

From the numbers given for Yangi Hissar, may roughly be calculated the cattle owned in the remaining oases of Kashgaria, except that in Southern Kashgaria the people own roughly about twice as many sheep as are shown for Yangi Hissar. In the other mountain districts the people may be assumed as owning about half the numbers given for Sarikol.

Domestic animals, to the value of about £12,000 annually, are imported from Russian Turkistan, principally from Semerechensk.

Milk, cream, curds, fowls, and eggs are plentiful in all the oases.

In the hills, the animals are in very good condition in the summer, the grazing being good, but are very poor in the winter, when it is scanty.

The fauna also of Kashgaria is not distinguished by the richness and variety of its species. In the hills there are antelopes, *ovis poli*, ibex, wild dogs, wolves, bears, lynxes, badgers and marmots; in the Central Kuen Lun there are wild yaks and wild asses. In the foothills tracts are found antelopes, foxes, and hares; in the lakes which do not freeze up there are otters; in the woods and groves of the river valleys there are deer, wild boar, wild cats, wolves and tigers. In the Kum Tagh, in the sandy desert to the east of Lob Nor, in the hills of the Kuruk Tagh, and in the districts of the lower Tarim, the Cherchen, and Keria rivers there are wild camels.

The ornithological fauna of Kashgaria is considerably more varied than the mammalian, especially in the Lob Nor district. Here, according to the information of Prjevalski, which is not quite complete, are to be found 134 species of birds, of which 25 species are permanent, 10 appear only in the winter, about 60 remain to nest, and the remainder are only birds of passage. In the mountains the birds most frequently met with are lammer-geyers, snow partridges, rock partridges, pigeons and other species of small birds.

There are very few varieties of fish in Kashgaria, in its lakes and rivers there are only five species, mostly of the carp family; the largest kinds of fish are to be found in lake Bagrach Kul.

Of reptiles and amphibious animals there are lizards, water snakes, toads and frogs. Of the poisonous species we may mention, tarantulas, scorpions and centipedes, which abound in the valleys of the larger rivers. In summer, in the woods and groves of these valleys are myriads of ticks, gadflies, midges, flies and mosquitoes which compel even the wild animals to go out into the desert, and which almost prevent movement along the roads which lie in the belt of woods.

TRANSPORT.

The transport animals in Kashgaria are mostly ponies, donkeys, and a few mules. Camels are common at, and west of, Kashgar, but they are only employed in winter. Where the country is mountainous, and the tracks dangerous, yaks are employed (*vide* page 120). In the Kuen Lun south and west of Khotan sheep are employed. Their usual load is 32lb, and their rate of marching is about $1\frac{3}{4}$ miles an hour. They must have grass. The commonest beast of burden is the donkey, which can carry a load of 160lb. Good donkeys are not easily procured; an inferior one may be

purchased for about 40 tengas (7s. 6d.); a fairly good one for about 100 (18s. 9d.); but for an exceptionally fine animal 160 (£1-10-0) would not be an exorbitant price. For the hire of donkeys the usual rate in 1900 was one miskal ($3\frac{1}{2}$ d.) each per day, but in Sarikol the rate was higher. Donkeys can travel 3 miles an hour.

The ponies used in Kashgaria are of two types, one large, the other small and thick-set. The large are much more common than the small, but they cost more, and for travelling in a mountainous country they are less suitable, as they are more troublesome to load, require more assistance on difficult tracks, and lose condition far more quickly than the smaller animals. A European, with the assistance of a native broker, may obtain a fairly good, small, baggage pony for about 200 tengas (£1-17-6), but in the negotiation of the bargain much patience is required. The hire of ponies is about double that of donkeys, but as their baggage load does not exceed 240lb, exclusive of corn, the use of donkeys is cheaper and more convenient. The mules nearly all belong to the Chinese and are well cared for and serviceable animals.

Carts in Kashgaria are of three types—the four-wheeled wagon, the two-wheeled "arba" or country cart, and the Chinese "mapa."

The four-wheeled wagon is drawn by four or five horses, and carries about $1\frac{1}{4}$ tons. It is used chiefly for the transport of straw, coal, wood, and other heavy or bulky goods.

The two-wheeled "arba" is of a similar type to that used in Russian Turkistan, its wheels are bound round with thick iron tyres, which are secured by high-headed nails; over the body of the cart is a zinc covering on a light wooden framework. It is usually drawn by three horses or mules, one in the shafts and the other two abreast of the first. The usual load is about 1,100lb. They are well built, being strong, but not too heavy.

The "mapa" is a small two-wheeled "arba," over the body of which is a covering of canvas or some light material. It is drawn by one horse, and does not carry more than 550lb. Owing to its shortness, narrow track, and small wheels, it is extremely uncomfortable, jolty, and unsteady. It is much more convenient without its covering. It is used chiefly for the carriage of passengers.

There is no information available as to the number of carts in Kashgaria, but 100 carts of various patterns could be collected at Kashgar at any time.

PRODUCTIONS.

The mineral wealth of Kashgaria is undoubtedly great, but it has been little explored and little worked, owing to the absence of experts and

Mines.

the want of capital. Up to the present, there have been discovered, and are being worked, mines of gold, lead, iron, copper, coal, salt, alum, sal ammoniac, silver and various other useful metals.

Gold has long been worked in Kashgaria, principally along the southern frontier, from the Kharangu Gold.

Tagh on the west, to the meridan of lake Lob Nor on the east (a distance of about 530 miles), at the foot of the Kuen Lun, and in the mountain valleys at a height of from 7,500 to 15,000 feet.

According to M. Bogdanovich, a Russian mining engineer, the gold mines are distributed in the following 12 groups:—

- (1) In the basin of the Khotan river, along the Yurung Kash and Kara Kash rivers.
- (2) Along the Kash river—the Chokar, Karatash, and Kap-salan mines.
- (3) The Kar Yagdi mines on the Kurab river, one day's march south of Polu.
- (4) The Surghak mines near the source of the Nia river.
- (5) Along the river Shemmalik Su.
- (6) Along the rivers Chijgan and Talkalik.
- (7) The Khan Bulak mines at the source of the Saryk Tuz river.
- (8) Mines at the sources of the Molja.
- (9) The Kopa mines.
- (10) The Khodallik Sai mines.
- (11) The Turgi Sai mines in the high snow-covered ranges of the Kuen Lun, about five marches from the last summer nomad camp in the valley of the Cherchen river.
- (12) The Akka Tagh mines on the Tibetan highlands.

The extraction of the gold is effected by the most primitive methods. The yield may be roughly estimated at 7,000 oz. a year. Colonel Korniloff gives the yield as from 4 to 6 dwt. per ton of gravel, and states that nuggets of considerable size are found.

Besides the places mentioned above, gold is also obtained in the valley of the Yarkand river above Kosarab, in the ravine of the Dinar north of Kuchar, and in the Kuruk Tagh at a distance of two days' march from Chinilg on the Khurla-Dural road.

The Chinese authorities have always asserted a sort of monopoly over the gold mines of Khotan, Keria, etc. The right of mining gold is allowed to anybody, subject to a tax of one-third of the gold found, (*vide* page 185), and no tax is demanded from the prospector, the free sale and export of gold being permitted. The District Magistrate of Keria, however, has recently taken all the mines under his own supervision and prohibited, as far as he can, the sale of gold to anyone except himself.

Coal has been found in the valley of the Yarkand river
 Coal. near Kosarab, in the valley of the Gez,
 and in the ravine of its tributary the
 Oi Tagh, at Kogren in the valley of the Markan Su, at Kansu (50
 miles west of Kashgar, on the Kashgar-Osh road), and near the
 towns of Kuchar, Khurla, and Aksu.

It is also said to exist at Tash Malik (two marches south-west
 of Kashgar, in Sarikol) and near Iggiz Yar, Karghalik and Ili.
 Of the mines mentioned, only those at Oi Tagh, Kogren, Kansu,
 Aksu and Kuchar are worked at present. The Kansu mines
 supply coal to the garrisons of Kashgar and Yangi Shar. Their
 annual output is about 3,200 tons. This coal has been analysed as
 follows,—ash, 13 %; volatile matter including water, 40 %; pure
 carbon, 47 %.

Naphtha.

Naphtha is said to exist at Kuchar,
 Aksu and Karangalik (about 1½ marches
 west of Kashgar).

In the eighth and ninth centuries, Eastern Turkistan, accord-
 ing to Arab historians, provided the whole
 Iron. Muhammadan world with iron, and iron

implements, and, if this is the case, the mines must then have been
 worked on a large scale. At present there is only one mine worked,
 namely, that at Tounlik, about 7 miles south-west of Iggiz Yar.
 This mine is worked by the people of the Iggiz Yar, Toplik, Kuduk,
 Chumlung and Kizil villages, in each of which are five or six
 smelting furnaces. It produces from 200 to 250 tons of metal per
 annum; 3,200 tons of iron are imported annually from Siberia.

Iron ore is also said to exist at Bazar Dara and numerous
 places in the Raskam valley.

Copper is mined in many places,—in the valley of the Khalastan
 Copper. river (near the sources of the Tiznaf, about
 12 miles above Brangs), at Kogren and

Kok Bulak in the valley of the Markan Su, at Sari Kamysh and
 Ulugchat in the valley of the Kizil Su, at Kalta Yailik (in the sub-
 urbs of Kashgar), at Bai, and in the valleys of the Kuchar river
 and its tributary the Kungei Koksu. The working of the seams
 of copper ore is a Government monopoly; the ore is smelted on
 the spot, and the metal sent to Kashgar and Aksu, where part of
 it is minted into money, and part is offered for sale. The ore from
 the Kizil Su mines consists of copper, iron and sulphur (copper
 pyrites) in the following proportions,—copper 30 %; iron 35 %;
 sulphur 35 %. It is said that the copper of the country, and
 particularly that of Bai, contains gold, but the question has
 apparently never been solved by actual analysis.

Lead ore has been found in the following places,—in the valley of the Kara Kash above Shahidulla, at

Lead.

Urta Kir to the south-east of Khotan, at

Kurgashim Khana on the Kashgar-Osh road, in the Kara Teke hills near Kalpin, near Kuchar, and at Khan Bulak in the Kuruk Tagh hills. At the present time only the Kuchar and Khan Bulak mines are worked. The Kurgashim Khana mines have long ceased working, although the ore there (galena) contains from 75 to 80 % of lead.

Sulphur is found in the Kugurt Tagh hills to the south of

Sulphur.

Kalpin, near the town of Kuchar, and

at Gubolik to the south of Polu. It is

exported to Russian Turkistan to a small extent.

There are rich mines of alum north-east of Kuchar in the Zemshi

Alum.

Tagh, and it is also found in the Tash

Kurghan valley near Baldir (in the ravine

of the Jmak Ka Ver), and near Tumai in the Keria district. Over 50 tons of alum were exported to Russian Turkistan in the year 1900.

Sal ammoniac is found in the neighbourhood of Kuchar, and is

Sal ammoniac.

exported to Russia to the amount of

about 260 cwt. per annum.

Deposits of common salt exist near the towns of Maralbashi,

Common salt.

Aksu, and Kuchar, at Sari Kamysh on

the Osh-Kashgar road, near Baldir in the

Tash Kurghan valley, near Syed Deif in the Vacha valley, and at Kadrakin Mazar on the Tash Kurghan-Baldir road. The inhabitants of the Yangi Hissar, Yarkand, and Khotan oases get salt from salt pans.

Saltpetre.

Saltpetre is obtained from the ruins of ancient towns near Aksu and Karashar.

The best and most extensive deposits of jade are to be found in

Precious stones.

the Kuen Lun. Here in the area from the

Muztagh Ata to the meridian of Lob Nor

jade-bearing seams crop up in seven districts,—along the Yarkand river near Pil and Tunga, in the valley of the Tizna, along the Kara Kash near Shahidulla, in the Kharangu Tagh, in the Lushi Tagh, in the Tokus Davan at the source of the Kara Muren, and in the Altyn Tagh along the Tatlik Su. Alluvial deposits of this stone are found on almost every river of Kashgaria, and in many waterless deserts. At present the deposits are only worked,—on the Yurung Kash at Kumat, on the Kara Kash near Uyat, and on the Tizna near Karghalik. The seams of jade are little worked.

A small quantity of saphires and emeralds is obtained in the Khotan districts.

Practically the only fuel used in the country is wood, supplemented in the mountainous regions by *Fuel.* dung and *boortza*. Trees are consequently disappearing, for the planting of young trees does not keep pace with the destruction of the old. The fuel supply of the towns has to be brought from ever-increasing distances, and at growing cost.

Ozokerit, or mineral wax, is obtained near Kuchar; asphalt, or bitumen, at Kizil Oi on the Kashgar-Osh road.

Miscellaneous. Marble, gypsum and emery abound in the Chol Tagh hills near Kizil Synur.

INDUSTRIES.

The manufactures of Kashgaria consist mostly of hand-made articles. The first place, both as regards the value of its productions and the number of hands which it employs, is taken by the manufacture of cotton goods,—textile fabrics, sacks, saddle bags and various small articles such as belts, tapes, girths, etc.

In Kashgaria three sorts of cotton fabrics are produced,—*mata* or coarse cotton cloth, *chakmen* and *sargyaz*.

Mata is a cotton fabric made of native yarn, in pieces which are from 6 to 11 yards in length, and 12 to 21 inches in breadth. The unbleached (*kham*) and bleached (*satedi*) are used mostly as sheets, but embroidered in dark blue they are used by the Chinese to make outer garments (*kurma*). At the places where it is made, *mata* is called by various names according to its length, breadth, and the nature of its texture.

Chakmen is a white cotton fabric made of twisted yarn, in pieces of about 19 yards in length and 9 inches in breadth; embroidered in cinnamon colour it is used chiefly for “*khalats*.”

Sargyaz is *mata* embroidered by hand in one or two colours, and is used mostly for underclothing.

All the above mentioned fabrics are produced in almost every town and village in Kashgaria, but principally in the town of Kashgar and the villages of Artish, Awat, Faizabad, and Tokuzak, and in the Khan Arik begship of the Yangi Shar district. In southern Kashgaria the principal centre of cotton manufacture is Khotan. The Khotan *mata* is famous for its strength, whiteness, and delicacy of texture, but owing to its rather high price it has not got much of a sale outside the Khotan district. The cotton manufactures of Kashgaria are amply sufficient for the wants of the local

population, and owing to their durability and cheapness they have a good sale in Russian Turkistan where they seriously compete with the productions of Russian manufactories. According to the customs returns for 1900, 162 tons of cotton fabrics were exported to Russian territory, in addition to about 24 tons of ready made clothes (*khalats*), which are made up by local tailors in the larger towns. Sacks and saddle bags are also made, and exported to Russia in considerable quantities,—in 1900 about 26 tons. The other cotton productions of Kashgaria are mostly used up in the country.

The manufacture of silk is carried on principally in Chira. Silk and semi-silk fabrics are made, and Khotan is also celebrated for the manufacture of silk carpets on a cotton foundation, which are noted for their colour, beauty of design, and durability; these, however, can only be obtained by special order. With the decline of sericulture the manufacture of silk has also declined.

From wool are made felts, carpets, and mats. The felt manufacture is carried on principally in the Woollen oases of Aksu, Yarkand, Karghalik, and Khotan. The Khotan felts, on account of their durability, softness, and beauty, are greatly valued throughout the whole of Central Asia. Woolen carpets and mats on a cotton foundation are made in the oases of Aksu, Yarkand, and Khotan, and owing to their brightness, beauty of design and cheapness, have a good sale in Russian territory, but their durability is inferior to that of Turkoman, Persian, and even Kirghiz carpets. The immense Russian demand of recent years has doubled the price of the carpets and greatly reduced their quality. All the old patterns have disappeared and the only work now done is in glaring colours and ugly patterns in Russian style. Aniline dyes are now almost exclusively used and it is impossible to get a carpet that keeps colour.

The dressing of furs, chiefly sheepskins, is carried on in the Furriery oases of Khotan, Aksu, and Kashgar; the Khotan skins are considered the best. Considerable quantities of dressed skins are exported into Russia, where the best of them, after some cleaning, are sold as "Tibetan."

The manufacture of leather is carried on in the oases of Yarkand, Leather and Kashgar. They prepare the hides of oxen, horses, sheep and goats; 300,000 sheep and goat skins are said to be exported annually, mostly to Russian territory. In the Yarkand oases, along with the manufacture of leather, is carried on the manufacture of footgear (shoes and

slippers); and joiner's glue is made from the clippings and useless pieces of skins. The native leather is not as good as Indian leather, and a considerable quantity of the latter is imported. Yarkand footgear is exported to almost every oasis in Kashgaria, and also to Russian territory.

The manufacture of pottery is confined almost exclusively to
Pottery. Kashgar. Earthenware utensils,—cups,
pots, jugs, plates and water-vessels—are produced and exported to the neighbouring districts.

In Southern Kashgaria wooden utensils are principally in use. Their production is not confined to one village or district, but is the special trade of wandering turners, who in gangs of three or four men wander from village to village, and carry on their trade of making vessels in co-operation, that is to say, a householder invites the party to his house; gives them material, and a place to work in, and keeps for himself half of the goods made; the other half is retained by the gang, and is sold locally.

Iron vessels, agricultural implements, nails, horse shoes, and
Ironware. various small articles for household use are made, mostly of iron imported from Russia. Only the five villages of the Yangi Hissar district, where the Tounlik iron ore is smelted, use local iron. In these villages plough-shares are made, which, owing to their cheapness, have a good sale in the neighbouring villages and in Southern Kashgaria.

Copper vessels are made from local material in the principal
Copperware. towns of the country, and are to a small extent exported into Russian territory.

In Khotan and Yarkand writing paper is made from the bark of
Paper making. mulberry branches, and in the trade is known as Khotan paper. Owing to its coarseness and inferior quality it has no sale outside the country.

Milling is carried on in all the oases of Kashgaria. The native
Flour milling. water-mills are built on the larger channels, usually near their head, and have 1, 2, or, occasionally, 3 wheels. The daily outturn of each wheel is on the average about 800lb of flour.

Fishing and hunting are the principal occupations of the population on the shores of lakes Bagrach Kul, Lob Nor, and Kara Kul, and on the lower courses of the Tarim and Konche rivers. The inhabitants of the latter district make artificial lakes, inundating the hollows along the

river banks by channels led from the river. Each lake has its special owners who alone are allowed to fish in it. The fish are caught by drag-nets and bag-nets, and sometimes by hooks and spears. The fish caught in Bagrach Kul is sold in Karashar, whence much of it is sent to Urumchi. That caught elsewhere is consumed locally. The principal animals hunted are, antelopes in the Kuen Lun, wild camels in the Kum Tagh desert, and in the Tarim jungles wolves, foxes, otters, and occasionally tigers. The Kalmuks in the Yulduz valleys hunt bears, goats, wolves, tarbagan, and the Yulduz fox, the skin of which is specially valued by the Chinese on account of its long soft fur. The Chinese also value highly deer horns, especially when in velvet, as they are supposed to have medicinal properties.

Among the nomad and semi-settled inhabitants of the country, manufactures are in a backward condition. We may mention, however, their hand-made felts, horse-clothes and ropes, which are chiefly used locally, only a small quantity being sold to the settled population, and in the neighbouring countries of India, Afghanistan, and Russia.

TRADE.

The internal trade of Kashgaria is confined chiefly to the exchange among the oases of their own produce, but the amount of this trade is small, as most of the oases produce similar articles and do not require any assistance from the others, with the exception of the articles mentioned in the account of the local manufactures which is given above. Hence the internal trade is mostly confined within the limits of each separate oasis, and is usually carried on in the bazars of the larger towns and villages on bazar days. The trade with internal China also is not large; the Chinese merchants who traffic in Kashgar, Yarkand and the other large towns of the country, bring various small articles of Chinese manufacture only to the extent that they are required by the Chinese officers and officials.

The great bulk of the external trade of Kashgaria is with Russia, and this trade is steadily increasing. In the decade from 1891 to 1900 the total of the trade with Russia rose from 2,172,495 roubles to 4,713,924 roubles, (£500,000). The trade with India through Leh shows little signs of expansion, and amounted for the year 1903-04 to a total of Rs. 17,76,262 or £118,418.

The following figures give the totals of the Russian trade under various headings, and also the percentages of the principal articles of import and export.

Totals of import and export trade with Russia for the year 1900.

---	Imports in roubles.	Exports in roubles.
Provisions	85,807	22,879
Raw and half-manufactured materials	152,008	675,106
Live stock	30,409	....
Manufactured articles	1,446,943	2,300,772
Totals ..	1,715,167	2,998,757

Percentages which the values of separate items bear to the total value of trade.

Imports into Kashgaria.	Exports from Kashgaria.	
	Per cent.	Per cent.
Manufactured articles, principally coloured chintzes ..	80·0	67·6
Live stock ..	5·1	4·2
Iron ..	4·0	4·0
Cast-iron and cast-iron articles ..	2·7	3·3
Sugar ..	2·0	3·3
Brown sugar ..	1·5	2·7
Wrought-iron articles ..	1·1	2·0
Tobacco ..	0·4	2·0
Steel ..	0·4	1·0
Copper and copper articles, dyes, kerosine, matches, soap, etc. ..	2·4	1·0
Cotton fabrics (<i>mata</i>) ..	..	0·9
Wool, clean and uncleaned ..	..	3·0
<i>Khalats</i> , belts, etc. ..	..	3·0
Sheepskins ..	..	2·0
Hides and skins, undressed ..	..	2·0
Woollen carpets ..	..	1·0
Leather footgear ..	..	1·0
Raw cotton ..	..	1·0
Felt ..	..	0·9
Gunny bags ..	..	3·0
Raw silk and cocoons ..	..	3·0
Alum ..	..	3·0
Hides and skins, dressed ..	..	3·0
Intestines, hair, sal ammoniac, sulphur, dried fruits, etc. ..	..	3·0

N.B.—The above tables are taken from Colonel Korniloff's "Kashgaria." The second table is possibly calculated on the trade for a series of years, as it does not agree with the figures in the first table for the year 1900.

Since 1899, with a view to the improvement of their export trade, the Russians have granted an excise drawback on cotton fabrics, refined sugar, and kerosine. In November of the following year a branch of the Russo-Chinese Bank was opened in Kashgar; one of the chief objects of this institution being the assistance of Russian trade. The principal centres of the Russo-Kashgarian trade are, on the Kashgarian side, Aksu and Kashgar, and on the Russian side Osh, Naryn, and Prjevalsk; the roads connecting these towns are the principal trade routes between Kashgaria and Russian territory. (*Vide Chapter V.*)

As long as Russia can forward her Moscow cotton goods for a paltry sum of 5s. 7½d. per pood (less than 2d. per pound), and is willing

to encourage this export trade by a bounty more than sufficient to cover the cost of carriage, Great Britain cannot possibly compete with her, when besides a 5 per cent. *ad valorem* duty levied in India, Manchester productions are handicapped by exceedingly heavy transport charges.

The 5% duty payable at Bombay is rebated at Leh on all goods marked at Bombay for export to Central Asia.

The principal centres of the Ladak-Kashgaria trade are Kashgar and Yarkand in Kashgaria, and Leh in Ladak. The latter place is also the principal receiving point of the Indian trade with Western Tibet. It is not, however, a commercial place, but merely a convenient spot where the trade passing in and out of the country can be recorded. The roads leading from Kashgar to Ladak are described in the next chapter, and it will be seen that the trade of Kashgaria with Ladak is carried on under much more unfavourable circumstances than that with Russian territory. The time taken by caravans between Yarkand and Leh is 30 days, while that between Kashgar and Osh is only 16, or about half. Moreover, the routes from Yarkand and Khotan to Leh cross the Kuen Lun and Karakoram ranges, which are much more difficult than the Alai and Thian Shan on the routes from Kashgar to Osh.

The following tables show the nature and amount of the trade between Ladak and Kashgaria for the year ending 31st March 1904.

The trade between Kashgaria and Badakshan is small and fluctuating. From Kashgaria are exported cotton goods, *khalats*, felts, ready-made shoes and *charas*, and the imports consist of pistachios, almonds, and occasionally horses and precious stones.

Imports from Ladak into Chinese Turkistan for the year ending 31st March 1904.

Names of Articles.			Quantity.	Value.
Animals, living (for sale) —				R.
(a) Horse, ponies and mules	..	..	Nos.	360
Cotton manufactured —				
(a) Piece-goods, European	..	..	Mds.	3,07,071
(b) Do. Indian	..	..	"	3,885
Drugs and medicines —				
Other than <i>charas</i>	..	..	"	21,171
Dyeing Materials —				
(a) Indigo	..	..	"	37,715
(b) Miscellaneous	..	..	"	3,521
Grain and pulse —				
Rice, husked	..	..	"	13
Hides and skins —				
Skins of sheep, goats and small animals	..	Pieces	10,183	49,480

*Imports from Ladak into Chinese Turkistan for the year ending 31st
March 1904—contd.*

Names of Articles.		Quantity.	Value.
Jewellery including precious stones —			Rs.
Coral	Mds.	140	1,48,424
Leather —			
(a) Unmanufactured	Scores	1,117	57,979
(b) Manufactured	Pairs	24	60
Metals and manufacture of metals —			
(a) Brass and copper	Mds.	..	10
(b) Iron	"	9	109
(c) Other kinds	"	5	1,294
Musk	Pds.	42	756
Opium	Mds.	3	1,333
Provisions —			
Other than ghee	"	94	1,870
Salt, Tibetan	"	4	8
Silk —			
(a) Manufactured piece-goods, European ..	Yds.	56,098	1,29,018
(b) Do. do. Indian ..	Pieces	2,556	48,839
Spices	Mds.	881	39,436
Stationery	"	50	1,769
Sugar —			
(a) Refined	"	104	2,108
(b) Unrefined	"	10	131
Tea —			
(a) Indian	"	1,162	34,711
(b) Foreign (Chinese)	"	82	9,136
(c) Lhassa Brick Tea	"	9	890
Wool —			
(a) Raw, including Pashams	"	7	140
(b) Manufactured piece-goods, European ..	Yds.	4,326	10,817
(c) Shawls	Pairs	5	75
All other kinds of merchandize —			
(a) Unmanufactured	{ Mds.	29	696
	{ Pieces	702	..
(b) Manufactured	{ Mds.	89	6,916
	{ Pieces	255	..
	TOTAL .. ..	..	9,19,741
Treasure —			
(a) Gold dust	"	..	120
(b) Silver	"	..	21,580
(c) Russian gold coins	Nos.	2,391	18,681
(d) Silver yambus	"	11	1,365
(e) Silver coins	"	..	8,759
(f) Miscellaneous	"	215	2,759
	TOTAL .. ..	..	53,264
	GRAND TOTAL .. ..	..	9,72,905

*Export from Chinese Turkistan to Leh, for the year ending 31st
March 1904.*

Names of Articles.		Quantity.	Value.
			Rs.
Animals, living (for sale) —			
Horses, ponies and mules	.. .. Nos.	532	37,485
Cotton manufactured —			
Piece goods, foreign	.. .. Mds.	15	1,937
Do. do.	.. .. Pieces	709	649
Drugs and medicines —			
(a) <i>Charchas</i>	.. .. Mds.	4,939	2,32,960
(b) Other kinds	.. .. "	2	89
Fruits and vegetables	.. .. "	..	2
Hides and skins —			
(a) Hides of cattle	.. .. Pieces	22	250
(b) Skins of sheep, goats and small animals	.. .. "	2,138	1,333
Horns	.. .. "	2	24
Jewellery including precious stones —			
Turquoises and precious stones	.. .. Beads	1,066	629
Leather —			
Manufactured	.. .. Pairs	122	305
Namduhs and carpets —			
(a) Namduhs	.. .. Pieces	18,399	39,950
(b) Carpets	.. .. "	394	5,910
Silk —			
(a) Raw	.. .. Mds.	324	1,81,635
(b) Manufactured piece-goods, foreign	.. .. Pieces	874	1,815
Spices	.. .. Mds.	17	747
Stationery	.. .. "	1	60
Tobacco	.. .. "	..	12
Wool —			
(a) Raw, including Pashams	.. .. "	210	8,126
(b) Manufactured piece-goods, foreign	.. .. Yds.	1,001	531
Yak tails	.. .. Pieces	151	151
All other kinds of merchandise —			
Manufactured	.. .. Mds. {	3	4,306
	.. .. Pieces {	1,799	..
	TOTAL .. ..	..	5,18,906
Treasure —			
(a) Gold dust	.. .. ..	..	600
(b) Silver	.. .. ..	..	430
(c) Russian gold coins	.. .. Nos.	34,810	2,71,958
(d) Silver yambus	.. .. "	21	2,558
(e) Silver coins	.. .. "	..	7,911
(f) Miscellaneous	.. .. "	66	858
	TOTAL .. ..	..	2,84,315
	GRAND TOTAL .. ..	..	8,03,221

CHAPTER V.

COMMUNICATIONS.

[General ; Internal roads of the country ; Roads from Kashgaria to Zungaria, Semerechensk, Ferghana, Pamirs, Afghanistan and India, Tibet ; Railways ; Waterways ; Postal Services ; Telegraphic Communication : Signalling.]

GENERAL.

THE means of communication in Kashgaria consist only of cart roads and bridle paths. The mountain girdle which surrounds the country on three sides necessitates the almost exclusive use of mule tracks between Kashgaria and the neighbouring empires of Russia and India.

The mountain roads of Kashgaria are characterised by the following general features : the season which is most convenient for the movement of troops along them is the autumn and the first-half of the winter, in the second-half of the winter, and during spring, many of the passes which are on these roads are blocked by snow drifts ; in summer movement is very difficult owing to the depth of water in the numerous rivers and streams. The surface of the mountain roads is for the most part rocky, it is scarcely affected by the weather, but it renders more difficult their construction and repair. The water-supply is quite satisfactory, as there is plenty of good fresh water along all the roads of the frontier mountain tracts, and with a few exceptions, it is evenly distributed, that is to say, the distance from water to water does not exceed a day's march. Fuel and fodder are to be found at all the camping-grounds, or close by in the neighbouring hills. An exception in this respect are the roads from Kashgaria to Ladak (see page 144). All the mountain roads run through districts, which are either uninhabited, or inhabited only by a few nomads, whose sole wealth consists in their flocks ; consequently the local supplies could only provide meat rations for the troops, and, to a limited extent, transport. From a tactical point of view the mule tracks which traverse the mountain belt rather favour the defence, enabling it with small forces to hold important points, and rendering difficult the deployment of a large force for the attack.

Communication on the plains of Kashgaria is carried on by cart roads and bridle paths. The main cart road runs along the foot of the hills which surround the country from Hami *via* Karashar, Aksu, Kashgar, to Khotan, uniting the oases of Kashgaria with one another and with the oases of Eastern Hsin Chiang. The bridle paths run in various directions between towns and villages. The Chinese "road" is merely a track, occasionally carried along a low embankment, and sometimes bordered by trees. It is not macadamized, and the surface consists of shingle, sand, clay, deep mud or dust, according to the nature of the soil of the country traversed, and the weather for the time being.

In the oases the surface of the track usually consists of loess, which, in winter after the melting of the snow, and in spring after rain, becomes so soft that movement along it is extremely difficult. Outside the oases the tracks run across saline, sandy, and rubble-strewn plains, or over loess hillocks which are covered with tamarisks. In the heat of the summer, the thick, saline, and sandy dust, and also the great heat of the surface of the desert, make travelling extremely painful. Consequently, autumn, and the beginning of winter, before the fall of the snow, is the best season for the movement of troops along the tracks of the plains. The water-supply in the oases is plentiful, if not always satisfactory; although running water is not to be had at all the villages along the road, still at each of them there are large lakes or ponds. The water from the ponds requires to be carefully boiled. Outside the oases, especially in Southern Kashgaria, large, waterless, or badly watered tracts are to be met with, and consequently for the movement of troops transport for water would have to be provided. Fuel, provisions, forage, and means of transport for the troops could be found in the oases in considerable quantity.

The roads (or tracks) of Kashgaria may be divided into the following seven groups:—

- I.—The internal roads of the country.
- II.—The roads from Kashgaria to Zungaria.
- III.— Ditto ditto Semerechensk.
- IV.— Ditto ditto Ferghana.
- V.— Ditto ditto the Pamirs.
- VI.— Ditto ditto Afghanistan and India.
- VII.— Ditto ditto Tibet.

I.—THE PRINCIPAL INTERNAL ROADS OF KASHGARIA are:—

1. The "Southern Imperial Road" from Hami *via* Karashar, Kuchar, Aksu, and Maralbashi to Kashgar.

This is the chief road connecting Kashgaria with Hami and the interior of China. Its length from Toksun to Kashgar is 846 miles. Along it move troops, and government and private carts, consequently it is kept in some sort of repair. It unites the oases which are situated on the southern foothills of the Thian Shan, and its whole length lies through inhabited districts; on those sections where the distance between inhabited points exceeds a day's march there are built Government or private posthouses (*lyangars*). Troops moving along this road would find water, fuel, provisions, forage and means of transport, but not grazing. As stated on page 122 marching by day in the summer is impossible on the wooded portions of the road on account of the mosquitoes and horseflies.

2. The Aksu, Utch Turfan, Bash Agma, Safr Bai, Belowti pass, Karaul, Kashgar road.

This road is shorter than the first road, but it is only fit for wheeled traffic at the ends. According to Colonel Korniloff, the road over the passes could easily be made fit for wheeled traffic. Its length is 296 miles. From Aksu to Safr Bai, and from Kalti Ailak to Kashgar, the road runs through inhabited country, and supplies of all sorts are plentiful, except grazing from Aksu to Bash Agma. Between Bash Agma and Kalti Ailak there is only a nomad population, and water and fuel are sometimes scarce.

3. The Kashgar, Yarkand, Karghalik, Khotan, Cherchen, Sa Chu road.

From Kashgar to Karghalik, *via* Yangi Hissar and Yarkand, there is a cart track in good condition. The distance is $155\frac{1}{2}$ miles. With the exception of a desert strip of about 30 miles between Kizil and Kok Rabat, where water is only to be found in wells and then brackish, the road traverses inhabited and cultivated country where plenty of supplies could be obtained.

From Kashgar to Yarkand there is another road *via* Khan Arik, Tarim, and Tagarchi. Distance about 135 miles. As far as the river Kara Su it is a cart track, but between the Kara Su and the village of Tarim the road for a distance of about 4 miles runs along an embankment, which is about $3\frac{1}{2}$ feet broad, between swampy fields, and consequently without preparation this would not be fit for wheeled vehicles ; beyond Tarim it crosses a strip, about 3 miles broad, of high sand dunes. Here the movement of field artillery and wheeled transport would be difficult, but possible with the assistance of infantry. At Tagarchi this road joins the cart track from Yarkand to Maralbashi. For its whole length, with the exception of from Tarim to Tagarchi, the road runs through thickly-populated districts where water, (mostly from ponds), fuel, provisions, and forage are plentiful. There is no grazing.

From Karghalik to Khotan there are two cart tracks,—*via* Kash Langar, Guma, Zanguya, and Pialma, distance 173 miles ; and *via* Sanju, Zanguya and Pialma, distance 189 miles.

The first road has less water than the second ; on the first three marches to Guma, the water is from ponds which are rarely fresh ; between Pialma and Zawa Kurghan, a distance of nearly 30 miles, there are only wells with a scanty supply of water. Moreover, as far as Zawa Kurghan, where the Khotan oasis commences, the road for the most part is through a sandy or stony desert, and consequently movement, especially in the heat of summer, is very fatiguing.

The second road is longer by about 16 miles, but water, fuel, forage, and provisions are much more easily obtained, and its surface is better, there are, however, some steep ascents and descents where the road requires some improvement.

From Khotan to Sa Chu there are two roads, the lower *viâ* Keria, Nia, Cherchen, Chargalik, and Abdall, distance about 1,035 miles; the upper *viâ* Keria, Surghak, Kopa, Cherchen, Chargalik, Jan Bulak, and Galechan Bulak, distance about 1,105 miles.

The former, which existed in the time of Marco Polo, was then a much-frequented trade route uniting Khotan and the oases of Southern Kashgaria with the interior of China, but by degrees it has fallen entirely into ruin. Latterly the Chinese Government has taken some steps towards its re-establishment; with their co-operation new settlements have been formed, the old posthouses have been rebuilt, and new ones erected, and new road marks have been put up. But, in consequence of the desert nature of the Nia-Cherchen and Chargalik-Sa Chu sections, it is little used, and is suitable only for the movement of small detachments with camel transport. Fuel and grazing for camels can be had along the road. In summer movement along it ceases entirely, because the water in the wells and springs is then very brackish, and in the woods there are myriads of gnats and mosquitoes.

The upper road runs along the northern foothills of the Kuen Lun. As it is crossed by the deep ravines of the rivers it is difficult for camels, but at many of the halting-places there is good running water. There is considerably less fuel and grazing than on the lower road.

4. The Yarkand-Maralbashi. From Yarkand to Maralbashi (a distance of about 153 miles), a cart road runs along the left bank of the Tarim, through inhabited districts, which abound in water, fuel, and grazing. At the time of high water the Tarim overflows parts of the road, forming muddy stretches, which are only passable on embankments or faggot-ways.

From Maralbashi to Utch Turfan (a distance of about 120 miles), there is a track which runs mostly through desert country, but no information about it is available.

5. The Khotan-Aksu road. From Khotan a bridle path runs along the left bank of the Khotan river to its junction with the Tarim. At the time of high water the river runs down to the Tarim, but on the fall of the river, below Mazar Tagh water is only to be found in pools, which remain in the river-bed until the next high water. Below Koshlash

there are no settled inhabitants, but shepherds with their flocks are occasionally met. In the summer the movement of caravans on this road almost ceases, in consequence of the insufferable heat and the myriads of mosquitoes, gadflies, ticks and other insects. The road crosses the Tarim just below the mouth of the Aksu river (332 miles) and proceeds along the left bank of the latter to Aksu (about 416 miles). Water, fuel, and grazing for camels are to be had all along the road.

6. The Chargalik, Kultokmit, Kema Sala, Shah Yar, Aksu Chargalik (Chaklik) up the valley of the Tarim to the mouth of the Aksu river (414 miles), where it joins the Khotan-Aksu road (No. 5). From Chargalik to Ayrilghan (56 miles) it runs up the right bank of the Tarim. Here it crosses the river, and then keeps along the left bank to the mouth of the Aksu. From Kirchin (104 miles), a track runs to Turfan, *viâ* Dural and Kizil Synur. From Kema Sala (152 miles), two good roads go to Khurla—one *viâ* Shinagha is 29 miles long, the other *viâ* Yandem is 69 miles. From Shah Yar (316 miles) a good road goes to Kuchar (29 miles). At the mouth of the Aksu river (414 miles) this road joins the Khotan-Aksu road (No. 5).

7. The Shahidulla, Iisu pass, Tash Kurghan, Muji valley, to the western frontier along the route Kosh Bel pass, Markan Su road. mentioned. At the Markan Su it joins the Kashgar-Kok Sai road (No. 16). An alternative road runs from Shahidulla to Tash Kurghan *viâ* the Kilian pass (page 39), Kugiar, and the Khandar pass (page 35). Numerous lateral roads unite these roads with Kashgar and Yarkand. The direct road is comparatively easy. The alternative road is very difficult, especially at the Kilian pass.

II.—THE PRINCIPAL ROADS FROM KASHGARIA TO ZUNGARIA are :—

8. The "Southern Imperial Road" to Teksun, and thence to Hami or Urumchi.

This is the continuation eastwards of road (1). It is fit for cart traffic.

9. From Kuchar and Karashar to Kuldja.

From Kuchar a road leads over the Kui Kule pass into the valley of the Great Yulduz, and joins the road from Karashar through this valley to Kuldja. This road crosses the Narat pass (page 8) and then descends the valley of the Kunges to Kuldja. It is not difficult, but is little used, as it is very circuitous, and traverses a barren and sparsely-populated locality. From Karashar to Kuldja is about 280 miles.

10. From Aksu to Kuldja, *viâ* the Muzart pass.

This is the shortest road between Aksu and Kuldja, but is very difficult. It was formerly reported as practicable only from north to south and with unloaded animals, but it was crossed from south to north in

September 1899 by Messrs. Church and Phelps with a caravan of loaded ponies. Distance about 260 miles.

III.—THE PRINCIPAL ROADS FROM KASHGARIA TO SEMERECHENSK are :—

11. The Bash Agma, Prjevalsk road. The chief obstacles on this road are the Aksai river and the Bedal (page 15) and Zaoka [Juka (page 12)] passes. The river is unfordable at high water. Both the passes are open almost the whole year round, but are steep and rocky, and the southern slopes of the Bedal are covered with ice, which disappears only for a short time in July. The road is suitable only for pack animals. The distance is about 157 miles. Water and grazing are to be had all the way, but fuel only on the lower slopes of the mountains.

12. The Kashgar-Terek pass road to Prjevalsk or Naryn. (page 16). Considerable improvements would have to be effected to make it fit for wheeled traffic. At the Aksai river the road forks, the southern branch going *via* the Kuber-gen, Chakyr Korum (page 13) and Barskoun (page 12) passes to Prjevalsk (about 265 miles), and the northern *via* the Bogushti pass to Naryn (184 miles).

13. The Kashgar-Naryn road *via* the Turgat pass. This road is at present only fit for pack animals. From Artish to the Turgat pass the road runs up the valley of the Suok, and at low water could, by some slight repairs, be made fit for wheeled traffic. The chief difficulty on this section of the road is its rocky surface. In places the road lies along the bed of the river, and is covered with gravel. In summer movement would be difficult on account of the high level of the water in the river. The ascent to the Turgat pass (page 16) is quite easy. After crossing the Turgat the road turns to the west and crosses the low and gentle Tuz Bel pass into the valley of the Arpa ; here it turns to the north and, after crossing the almost imperceptible Bel Kara Su water-parting, between the Arpa and Kara Kain rivers, it bends to the east, and descends the valley of the latter river to Atbashi, thus turning the western end of the Ak Tash range and avoiding the very steep and difficult Tash Rabat pass which is on the direct road from the Turgat pass to Atbashi. The Turgat pass is open the whole year round and has very slight relative elevation. The Naryn-Atbashi cart road was prolonged to the Turgat pass in 1905 and the Russians are negotiating with the Chinese for its continuation to Kashgar. The distance from Kashgar to Naryn is about 195 miles. There is plenty of water all along the road. Grazing is abundant on the north of the Turgat pass, but is scanty and only to be had in places to the south of it. Fuel is plentiful on the south of the Turgat, but scanty on the north of it, especially between the Turgat and Atbashi.

IV.—THE PRINCIPAL ROADS FROM KASHGARIA TO FERGHANA
are :—

14. The Kashgar, Oital, Osh roads. From Kashgar to Oital there are 7 roads, or, more correctly, tracks. These are :—

(a) Kashgar, Kizil Kurghan, Suok pass, Oital (165 miles).

From Kashgar to the Suok (page 19), this road (after the river falls), is quite fit for wheeled traffic, and would only require some slight repairs, chiefly the construction of ramps for the crossing of the *nalas*. The Suok pass is easy, but the road thence to Oital is very difficult, even for pack animals.

(b) Kashgar, Karangalik, Kogart pass, Oital (180 miles). On this route there are between Karangalik and Kugurt Mazar in the Suok valley, the two passes Satma Bel and Sasik which are fairly steep on their southern sides. They may, however, be avoided by using the (a) route. The Kogart pass (page 19) is easy.

(c) Kashgar, Uksalir, Talgui pass, Oital (185 miles). Besides the high and very steep and rocky Talgui pass (page 19) there are also on this road the Bek Bulak and Akran passes, which are also steep and difficult.

(d) Kashgar, Ulugchat, Siedam pass, Oital (185 miles).

(e) Kashgar, Ulugchat, Savayardin pass, Oital (173 miles).

(f) Kashgar, Eghin, Tart Kul pass, Oital (190 miles).

(g) Kashgar, Eghin, Kyz Dar pass, Oital (187 miles).

All these routes are merely footpaths over rocky débris and along narrow, precipitous ledges, (page 19).

The roads mentioned have abundant grazing and fuel along them, but the passes are only open during the three or four summer months. From Oital to Osh (110 miles) there is a bridle path along the valley of the Tar river, but in summer it is almost impracticable.

15. The Kashgar, Sufi Kurghan, Gulcha, Osh roads. From Kashgar to Irkeshtam the road runs via Karangalik, Uksalir, Ulugchat and Eghin, a distance of 144 miles. Of this, 102 miles are suitable for wheeled traffic, 32 could easily be made so, and the other 10 would require considerable work. Even this part could be passed with the assistance of infantry, and some loss of time, as was proved by the arrival recently of the cylinder of a cotton press, which weighed over half a ton and was carried on an ordinary four-wheeled cart, whose width of track was 4' 8". The road had only to be made in one place—the Bur ravine. In summer the chief difficulty is the

crossings of the Kizil Su between Ulugchat and Eghin, but these can be avoided by a cart road from Sari Kamish to Eghin. The low, but steep and rocky, Chil Puehte pass near Sari Kamish, would require some improvement. It is also possible to go from Karangalik to Irkeshtam along the valley of the Kizil Su. This route is some 5 miles shorter than the ordinary caravan road, and is richer in fuel and grazing, but in summer it is quite impracticable, owing to the rise of the river. During the rest of the year it is difficult, owing to the numerous steep rocky crossings over gullies and spurs.

From Irkeshtam to Sufi Kurghan there are three roads—

- (a) *Viâ* the Terek pass (43 miles); this is a bridle path and very difficult; the pass is 12,700 feet high, and its northern slopes are steep (page 20). The road runs along many narrow ledges and crosses numerous deep and rocky *nalas*. It is, however, open for ten months of the year, and is only difficult in April, May, and June owing to the slush under the melting snow, and the great rise of the Terek Su streams. It is, however, passable even then with light loads.
- (b) *Viâ* the Taun Muran and Taldik passes (75 miles). This is a cart road except for the first 20 miles, and even this portion is so easy that it could be traversed by field artillery and light wagons. This road (page 20) is much used from the middle of May to the end of September, as it has good grazing and is much softer than the road by the Terek pass. It is completely closed by snow from November to April, and sometimes to the end of May.
- (c) *Viâ* the Taun Muran and Shart passes (53 miles). This road is shorter than the former as it cuts off a corner, but the road over the Shart pass is only a bridle path. It is also closed from November to April or May.

From Sufi Kurghan there are two roads to Osh—

- (a) *Viâ* Gulcha and the Chigirchik pass (75 miles). A cart road.
- (b) *Viâ* Gulcha and the Kaplan Kul pass (63 miles). A good bridle path.

V.—THE PRINCIPAL ROADS FROM KASHGARIA TO THE PAMIRS are—

16. The Kashgar, Markan Su, Kok Sai road. This road leaves the Kashgar-Osh road near Karangalik, and crossing the gentle Kara Bel pass, goes *viâ* Chichirganak to the Markan Su valley, which it ascends to Kok Sai, at the southern foot of the Kizil

Art pass, on the Osh-Murghabi cart road. In summer this road is impassable, as the crossing of the Markan Su is dangerous at high water. But after the fall of the water, it is a good bridle path. The chief difficulties on the road are the numerous deep and steep ravines, cut in the soil by the spring streams, and occasional narrow ledges, covered with stones. The absence of passes, and the ease with which ramps could be made, indicate the possibility of making this into a good cart road, which would be shorter than any other road leading from Kashgar to the Pamirs. The distance from Kashgar to Kok Sai is about 190 miles.

17. The Kashgar, Gez, Bulun Kul, Rang Kul, Murghabi road. As far as Tash Malik (about 40 miles) the road traverses the level plain. Thence to Kuruk Kurghan the road ascends the Gez valley. In the summer (end of June to beginning of September), it crosses the Tokus Davan, or 9 passes, and is very difficult—in places ponies have to be unloaded; during the rest of the year, when the river is low, the road runs along the river valley and is also very difficult. From Kuruk Kurghan to Bulun Kul (about 32 miles), the road continues up the valley, crossing from side to side, sometimes by wooden bridges. From Bulun Kul to Rang Kul (about 43 miles) the road ascends the Ak Berdi river and crosses the pass (page 25) of the same name, or the Chon Kotai (page 25), which latter could easily be made fit for wheeled traffic, and is open the whole year round. From Rang Kul to Murghabi is about 31 miles, and the road is good all the way.

18. The Kara Su, Kulma pass, Murghabi road. This road leads from road No. 7 to Murghabi (about 64 miles). The Kulma pass (page 25) is easy and is open almost the whole year round.

19. The Yangi Hissar, Chahil Gumbaz, Tash Kurghan, Neza Tash, Ak Tash road. Between Kashka Su and Shindi this road is very difficult, crossing several passes (page 33) and the Tangitar river, it is, however, used by the Kashgar mail in the summer months, owing to the greater difficulty of the Gez route. (Yangi Hissar to Tash Kurghan about 142 miles). From Tash Kurghan to Ak Tash (33 miles) the road in winter is quite fit for pack animals, but in summer it is difficult, owing to the depth of water in the Shindi river.

A road runs from Yarkand to Chahil Gumbaz over the Kara and Kizil passes (page 33) and along the very difficult Tangitar river. Distance about 113 miles.

VI.—THE PRINCIPAL ROADS FROM KASHGARIA TO AFGHANISTAN AND INDIA are:—

20. The Tash Kurghan, Wakh Jir pass, Bozai Gumbaz road. This route, which is practicable for laden ponies, leads over the Wakh Jir pass to Bozai Gumbaz in Wakhan, and thence to Faizabad or

Chitral. The Wakh Jir pass is easy after the melting of the snow (July to September), but difficult at any other time. It closes altogether in January. Grazing is abundant. Distance about 130 miles.

21. The Tash Kurghan, Kara-chukar, Hunza road. This route is easy in Kashgaria, but difficult in Hunza. The frontier is crossed by the Kilik or the Mintaka pass. The former is preferred in summer, and the latter during the rest of the year (*vide* page 28). Distance 162 miles. Water and fuel are plentiful, and grazing generally abundant.

22. The Karghalik, Aktagh, Karakoram, Leh road. In winter the road from Karghalik to Aktagh goes by Kugiar and Kulanuldi. This route is only practicable when the upper courses of the Tiznaf and Raskam Rivers are low and frozen over. Distance to Leh 409 miles. During the remainder of the year traffic goes by the very difficult Kilian pass (page 39), (where yaks are necessary), and Shahidulla. Distance to Leh 380 miles. There is an alternative route to the Kilian, namely, by Sanju, the Sanju pass (page 39), and Shahidulla. Distance to Leh 402 miles. All these routes, but especially that by the Kilian, are very difficult. From Aktagh the road crosses the very high Karakoram pass (page 29), and thence goes *viâ* the still more difficult Sasar pass (page 29) to Leh. Fuel and forage very scanty on and near the Karakoram pass.

23. The Shahidulla, Chang Chenmo, Leh routes. There are three routes from Shahidulla to Leh, *viâ* the Lingzi Thang plains and Chang Chenmo. They are respectively 313, 380, and 372 miles long. The shortest is probably the best. They are little used, because, in addition to the intense cold, the extreme elevation at which the traveller has to remain for so many marches, exhausts the animals, and water and fodder are in many places very scanty.

VII.—FROM KASHGARIA TO TIBET :—

24. The Abdall, Temerlik, Tsaidam, Lhassa route. Every year large numbers of Mongol pilgrims travel from the Mongol provinces of Russia and China to Lhassa, *viâ* Abdall. They pass through and return through Abdall during the cold season, lest their camels should be tormented to death by the gadflies there.

There is a route to the south from Keria, *viâ* Polu and the At To pass, and Sven Hedin found a pass a little to the south-east of Kopa, but these tracks are very difficult and practically never used.

Of the roads outside the frontier the following are important :—

(A) The cart road from Andijan, the terminus of the Central Asian Railway, to Murghabi on the Pamirs, *viâ* Osh, Gulcha, Taldik pass, Kizil Art pass and lake Great Kara Kul. Distance about

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Addendum to Military Report on Kashgaria.

Page 144. Paragraph 22.

A new pack pony route has been sanctioned from Leh to Karakoram *via* Durgup, the Sheok valley and Murgo.

The road through the Durgup defile is complete, the gorge bridged below Sheok and work carried on to near the mouth of the Chang Chenmo River.

By using this route two journeys can be made between Leh and Yarkand *via* Kugiar, in one season instead of one only by the Sasar Pass.

275 miles. Colonel Yonoff, in 1892, marched from Soma Tash (south-west of Murghabi) to Margilan with 700 men and two guns, in three weeks.

(B) The cart road from Tashkent, *viâ* Tokmak and Verni, to Kuldja, with branches to Naryn and Prjevalsk. From Kuldja this road continues to the east through Urumchi, and joins the Southern Imperial Road at Hami.

RAILWAYS.

There are no railways in Kashgaria.

WATERWAYS.

The rivers of Kashgaria are not at present used for purposes of navigation, but Colonel Korniloff considers that it would be quite possible for small steamers, of not more than 3 feet draught, similar to those used on the rivers of Russian Turkistan, to travel on the Tarim from Tugarak (near Yarkand) to Lob Nor, on the Konche River from Karashar to Tikkenlik, on the Aksu River from Aksu to its mouth, and on the Cherchen River from Cherchen to Kara Buran. This would, however, appear to be possible only at high water, as Sven Hedin, who travelled down the Tarim from Lailik to Lob Nor between September and December 1899, in a ferry boat which had a draught of 9 inches, states that he ran aground every day. On the other hand, a small steamer of 18 inches draught would be able to avoid sand-banks on to which the ferry boat drifted, perhaps through want of motive power.

POSTAL SERVICES.

The Chinese official post runs from Urumchi *viâ* Aksu to Kashgar, and thence to Yarkand, Khotan, and Keria. From Yarkand there is also a line to Marallashi. Along these routes there are post-houses (*lyargars*), at a distance of one day's journey apart. These posthouses are each under a postal official, and are supposed to have three post-boys and three horses each for the purpose of carrying on the mails. However, there is usually no undue hurry, as a letter from Khotan to Yarkand, a distance of 230 miles, has been known to take ten days *en route*. The speed with which letters are to be carried is marked on the envelope. In cases of urgency letters are marked to be carried at the rate of 400¹ *lis* a day; and if they are carried at a slower rate the persons who have caused the delay are severely punished.

In addition to the above, there is a "flying post" for communication with the frontier stations. The forwarding of this post

¹ A *li* is equal to about $\frac{1}{3}$ English mile; 10 *lis* on level ground are an hour's march.

is the duty of the nomad inhabitants of the district. Such posts are organized along the lines—Kashgar-Chakmak, Kashgar-Ulugchat, Kashgar-Bulun Kul-Tash Kurghan, Yangi Hissar-Tash Kurghan, and Yarkand-Tash Kurghan.

The British maintain a tri-monthly mail service from Gilgit to Kashgar, *via* Hunza and Tash Kurghan, leaving Kashgar and Gilgit on 10th, 20th, and last day of each month.

The Russians have their own mail services from Kashgar to Naryn, Kashgar to Osh, and Kashgar to Murghabi (*via* Tash Kurghan).

TELEGRAPHIC COMMUNICATION.

There is only one telegraph line in Kashgaria. It runs from Kashgar to Urumchi, and thence to Pekin. Messages for Russian territory are transferred to a Russian office at Chuguchak. The only telegraph offices in Kashgaria are at Kashgar, Yangi Shar, Aksu, and Karashar. Telegraphic messages from Kashgar to Pekin take from one to three days in transit. Telegrams can be sent either in the Chinese language or in any European language written in Roman characters. If a message in any other language, for example that of the natives of Kashgaria, has to be sent, it is first translated into Chinese. Owing to the impossibility of signalling the 4,000 Chinese characters, each of them is denoted by a number, so that Chinese messages have to be "coded" at the station of despatch, and to be "decoded" at the receiving station. All the telegraph operators are familiar with English, which is used in conjunction with Chinese on the telegraph forms, but the system as regards Chinese messages is cumbrous, and there is a possibility of frequent mistakes. Moreover, as each step of the process has, of course, to be paid for, the cost of telegraphing is high, the rate having been twice raised during 1898-99.

The nearest British telegraph office is at Gilgit. The nearest Russian office is at Irkeshtam, to which place a line was laid in 1904. At Irkeshtam only messages in Russian are accepted. Messages can be sent in any European language from Osh.

SIGNALLING.

As was stated on page 105, visual signalling in the plains would not be likely to be useful, owing to the hazy nature of the atmosphere.

CHAPTER VI.

FORTRESSES.

[Fortified Posts.]

THERE are no fortresses, in the modern sense of the word, in Kashgaria. There are, however, numerous fortified places, whose defences are of a primitive description, and usually constructed with an absolute disregard for all the tactical requirements of the locality. The main walls are of great solidity and would be difficult to breach with field artillery, without a very large expenditure of ammunition. The small walls for the protection of the firing lines could, however, be easily swept away, and the defence of the main walls could be made quite impossible by the employment of enfilade fire. There is usually cover for the attack right up to the walls, on one or more faces, owing to the way in which the glacis is cultivated or built over. The inhabitants of the forts are usually so crowded together, that a few shells dropped into the fort would produce great loss, and this would probably cause a surrender without further fighting. The chief object of these fortifications was to provide a refuge for the Chinese in case of a local rising, and to overawe the natives, and for this they are quite sufficient.

The strongest and most important of these fortified places is Kashgar Yangi Shar. (Plan 1.) It is situated about 6 miles to the south-east of Kashgar, and 3 miles to the south of the Kizil Su. The surrounding locality is covered with villages, farmsteads, gardens and fields. The soil is a sandy loess. In shape the Yangi Shar is roughly a square, with sides about 1,200 yards long. The northern and eastern faces are straight, with a blunted angle at the north-east corner. The southern and western faces are rounded, especially the southern. There are three gates, one each in the centre of the northern, eastern and southern faces. The gates are protected by projecting bastions, which on the northern and eastern faces are square, and on the southern is semi-circular with a diameter of about 50 yards. The external gates in the bastions are not opposite the gates in the main walls, but at the sides. Besides protecting the gates, these bastions flank with rifle-fire the main walls of the town. With this object, there are also placed along the main walls square projections or bastions, about 250 yards apart, and projecting about 20 feet from the main wall. At the ends of the northern face there are bastions which are prepared for artillery defence, but most of the other bastions are only for infantry fire.

In profile the defences consist of an earthen rampart, which is about 28 feet high, and about 21 feet thick at the top. The exterior slope of the rampart is about $\frac{6}{1}$, and the internal slope about $\frac{10}{1}$.

On the external edge of the rampart is a mud wall about 7 feet high and $2\frac{1}{2}$ feet thick. Thus the height of the whole is about 35 feet. In the wall there are notches and loopholes for rifle-fire. The notches are about 1 foot broad and $2\frac{1}{2}$ feet deep, their lower edge is about $4\frac{1}{2}$ feet above the ground, and they have a very slight splay outwards. The loopholes are small square openings in the wall between the notches, about 30 to 40 inches apart, and at the same height as the bottom of the notches. Square embrasures for gun-fire have been made in some of the bastions, and are faced with burnt brick or wood. Along the inner edge of the rampart there is a mud wall about 4 feet high. On the upper surface of the corner bastions, and some of the others, and over the gates, small machicolis galleries have been made for the defence of the ground in front, and for the protection of the sentries. Communication between the interior of the fort and the top of the rampart is effected by means of ramps, placed near the gates and at the corners, and also by means of stairs in the towers at the gates. In front of the rampart, along the edge of the escarp, there is another wall of the same height and size as that on the front of the rampart. Between this wall and the rampart there is thus formed a covered-way which is about 12 yards broad. The ditch is from 30 to 35 feet broad, and not more than 14 feet deep. For communication with the outside there are passages left in the external wall, and wooden bridges are built across the ditch. The ditch is dry, but it could easily be flooded from the neighbouring water-channels.

The main street of the fort runs from the north to the south gate, and along it are the shops of the Chinese merchants, and workshops of all kinds. In the north-east corner are situated the magazines of arms and ammunition, the Yamen of the T'i Tu, or Commander-in-Chief, and the barracks of his bodyguard and of the artillery. In the south-east corner is the Yamen of the Chih Fu of the district, and not far from this are the store-houses for provisions. In the western half of the fort are the barracks of the infantry "lianzas." In the absence of a citadel these might serve as internal points of defence.

Water is obtained from a channel which is led through the western face on an embankment, and is considerably raised above the surrounding ground, and which crosses the ditch by means of an aqueduct. These erections could easily be destroyed, but there are some extensive reservoirs in the fort, and besides, owing to the height of the water-level in the ground, water could easily be obtained by digging wells.

Along the northern face of the Yangi Shar, at a distance of from 10 to 15 paces from the edge of the counterscarp, is

the extensive Yangi bazar ; along the eastern face there are, first, a few scattered farmsteads, then the Nachuk bazar opposite the gate of the same name, and further to the south, brickfields and a number of deep holes ; opposite the southern face there extends a marshy meadow about 600 yards broad, and beyond it are the farms of the Kachirchi village. The roads leading from the southern gate to the village run along embankments. The ground opposite the western face is open for a distance of about 1,200 yards, and here is situated the drill ground ; fairly close to the north-west corner there are a few farmsteads.

There are no advanced works, and the barracks of the troops quartered in the neighbourhood are not suited for this purpose. Three barracks (two cavalry and one infantry) are situated opposite the north-west corner of the fort, at a distance of from 300 to 600 yards from it, and two (cavalry and infantry) are situated about 300 yards from the eastern face.

The defences of Kashgar consist of a rampart and ditch. The Kashgar, old town. (Plan 2.) profile of the former resembles that of Yangi Shar, except that there is no wall along the escarp, and the ditch is so much filled up, that in places it is merely a slight depression in which vegetables are grown. The eastern and southern gates are protected by square bastions ; the northern gate has no external protection. The fortifications of Kashgar are fairly well preserved. Thanks to the height and solidity of the ramparts they would present a fairly serious obstacle to an attack, but the Chinese do not trouble themselves about repairs.

Attached to the western end of Kashgar town is the Kunya Gul Kunya Gulbakh. (Plan 2) bakh fort. In plan this fort is an almost complete circle, and is joined along the chord to the wall of the native town. The section of the fortifications is exactly similar to that of the Yangi Shar fortifications. In the parapet wall of the rampart of the bastions there are three embrasures for gun-fire in each of the external bastions, and four in the bastions which are at the points where the wall of the fort joins the wall of the town ; one of these embrasures is intended for fire along the rampart of the town wall, and another is for firing on the town itself. There are two gates in the fort, one for communication with the town, and the other for external communication. The latter is protected by a semi-circular bastion.

Water is obtained in the fort by means of a channel led through the western face. By means of this channel the ditch could be filled, but the latter could be easily run dry, if the embankment which forms its north-eastern end were cut, as the ground here slopes considerably towards the north-east.

The northern and western faces of the fort have no glacis, as on this side the gardens, brick works, Chinese cemetery, ruins of old fortifications, etc., come close up to the walls. Only on the southern face is there a small glacis, not more than 600 yards wide, but across this, at a distance of about 150 yards from the escarp, there runs a water-channel on a high embankment. Between the channel and the walls there is a pond which is about 6 feet deep. Within the fort are barracks for the garrison, and the Yamen of the Commander; all these buildings are surrounded by a mud wall about 14 feet high.

The other fortified places of Kashgaria have some slight peculiarities as regards their plan, and as regards their profile they differ little from that of the Kashgar Yangi Shar; they will consequently be only shortly described.

The fort of Maralbashi is a square of about 400 yards side.¹

Maralbashi. There are circular bastions at each corner, and semi-circular ones at each of the four

gates, which are in the centre of the four sides. There are circular towers on the corner bastions, giving a second line of musketry fire. The walls are 15 to 18 feet high and revetted with brick. In 1903 the bricks had fallen away to a height of 6 feet, and the corner towers were cracked and rotten.

The fort is a square, with sides from 300 to 400 yards long. In

Utch Turfan. the centre of each face and at the corners, are bastions for flanking the ditch; the

latter is from 20 feet to 30 feet wide and about 7 feet deep. On the northern side there extends a marshy depression; on the east the native town adjoins the fort. On the western side a high rocky ridge, from 500 to 600 feet high, forms part of the defences, and extends in a bow round the southern face, its eastern end being on the Aksu road. In its central part the ridge is not more than 450 yards from the walls of the fort; on the highest point of the eastern end of the ridge, at a distance of about 700 yards from the fort, is built a stone citadel, or, more accurately, a watch tower.

The fort is square, on a line bearing 55° , the sides are about

Aksu. 1,000 yards long; at the corners, and in the centres of the sides, are bastions

for flanking fire, the walls are about 20 feet thick and from 15 feet to 18 feet high. The musketry parapet on top is about 6 feet high and 3 feet thick. The similar parapet along the edge of the escarp has disappeared along the north-east side and at the north corner, where

¹ Kornilo^{ff}, Kashgaria, page 414, describes this fort as a pentagon with sides about 300 yards long, and a single gate on the eastern side, leading to the native town, which latter blocks up the glacis.

the Turki bazar comes right up to the walls. The ditch, where it exists, is 30 to 40 feet wide, and shallow. There are some "inpans" (*vide* page 152) outside the town, on the west of it.

Kuchar can hardly be considered a fortified place. It is surrounded by a mud wall of the usual pattern, which was once 15 feet to 18 feet high and about 10 feet thick at the top. This was in a crumbling condition in 1903.

Khurla fort is about 350 yards square. Its walls are 15 feet to 18 feet high, and of the usual pattern.

Dural fort is about 900 yards square. It has the usual flank defences. The walls are about 30 feet high. The ditch is about 14 feet wide and 14 feet deep. On two sides the fort adjoins the Turki town.

Karashar fort is an oblong, measuring about 450 yards by 350, with flanking bastions at the corners. The walls were originally about 12 feet high, with an additional mud parapet some 6 feet high on the front edge, but in 1903 they were in a semi-ruinous condition, and were being repaired to some extent. The small outer wall and ditch which existed in 1886 had disappeared in 1903. To the south of the town is an "inpan" measuring about 175 yards by 325. To the south-west is the native town.

The fort of Yangi Hissar is situated on a plain, and closely adjoins the native town, which is on the south-east¹ of the fort.

It is square, with sides about 500 yards long, and has the usual flanking bastions at the corners. There are three gates with protecting bastions, those on the north-east and south-west are square, and the south-east gate has a semi-circular bastion. There are also some smaller bastions at intervals along the sides. The profile of the fortification is similar to that of the Kashgar Yangi Shar, but on a slightly smaller scale. On the south-east the fort has absolutely no glacis; on the south-west the ground is open for a distance of about 300 yards, beyond this there are the gardens and farmsteads of Kosh Arik. On the north-west the ground is open for a distance of about 1,200 yards; on the north-east, at a distance of about 150 yards, is the *nala* of Suluk Yar, which is about 120 yards broad, with perpendicular banks about 20 feet

¹ Three different authorities respectively state that the fort lies on the west, north, and north-east of the town, and the only available plan has no north point. From a comparison of the details of the various descriptions it is probable that the fort really lies, as stated above, on the north-west of the town.

high; about 50 yards beyond this are the gardens of the Chakar village; close to the eastern corner is the Chilyan village; and just south of the eastern corner, almost touching the edge of the counterscarp, is the "inpan" of the cavalry "lianza." There is a good position for hostile artillery opposite the western corner, at a distance of about 1,200 yards.

The Yarkand fort is situated to the west of the native town, Yarkand. at a distance from it of about 350 yards.

In plan it is an oblong with sides of about 600 and 700 yards, with the usual bastions at the corners, and with gates on the east and west sides. The profile is similar to that of Yangi Hissar, but slightly smaller. Two rows of shops, with ruins of mosques and other buildings, extend along the sides of the road which connects the fort and the native town. Outside the western face of the fort there is an extensive bazar. Only on the north and south faces is there some open ground. Within the fort are quartered a cavalry and an infantry "lianza"; and all the Chinese of Yarkand, with a few natives, also live in the fort.

The Khotan fort is square, with faces about 450 yards long, Khotan. and with bastions at the corners and along the sides. It has gates on all four sides. Within the fort are the barracks of a cavalry and an infantry "lianza."

The Chinese troops, whether in town, fort, or country, are "Inpans." always quartered in defensible barracks, called "inpans." Although these barracks differ in size, according to the strength of the detachments occupying them, the general type of all is similar, namely, a small fort, surrounded by a mud wall, having flanking towers at the corners and a wet ditch. The walls are usually about 14 feet thick and the same in height; they have a slight slope on both sides; there is a parapet on the top with notches and loopholes. The ditch has a depth of about 14 feet, and water is let into it by small canals. There is only one gate into this fort. Inside the "inpan," immediately opposite the gate, at the wall opposite, is the abode of the commander of the "lianza" and those belonging to him; on the right and left walls are the barracks—cold, damp, and unhealthy. Soldiers' families are housed with the "lianzas," but in separate buildings. In some of the "inpans" there are, on the corner towers, open sheds for the sentries, in others these erections are over the gate.

In addition to the Chinese forts already described there is at The Russian Fort at Tash Kurghan. (Plans 4 and 5.) Tash Kurghan a Russian fort of which the following is a description based on locally-obtained information.

The walls are about 7 feet or 8 feet thick ; they were (in 1903) about 8 feet or 9 feet high ; work was then going on steadily and the fort was expected to be finished by the end of that year. It is built of sun-dried bricks ; inside the walls are rooms for the men to live in, 17 rooms with doors communicating all round the fort—the towers are probably officers' quarters—there are no stables. The fort is about 545 feet square, with flanking towers at the north-west and south-east corners. The entrance is on the east, by the south-east tower. Each tower has six faces and two narrow windows in each face of the tower. There are apparently no loopholes in the walls, excepting the windows in the towers, but the walls are not yet finished ; loopholes will probably be constructed higher. The water-supply of the fort is from irrigation canals close by on the west, and also from the river on the east. When finished, it will accommodate at least 250 men. According to the agreement with the Chinese authorities it is supposed to contain one officer and ten men.

CHAPTER VII.

HISTORY.

[Original inhabitants ; Conquest by different races, etc.]

ORIGINAL INHABITANTS.

It appears very probable that at the dawn of history Eastern Turkistan was inhabited by an Aryan population, the ancestors of the present Slavonic and Teutonic races, and that a civilization not inferior to that of Bactriana had already developed at that time in the region of the Tarim. Our knowledge, however, of the history of the region is very fragmentary until about the beginning of the Christian era. When the Huns (Hiong-nu) occupied West and East Mongolia in 177 B.C., they drove before them the Yue-chi (Yutes, Yetes, or Ghetes), who divided into two hordes, one of which invaded the valley of the Indus, while the other met the Sacae in Eastern Turkistan and drove them over the Thian Shan into the valley of the Ili. Thus by the beginning of our era the Tarim region had a mixed population of Aryans and Ural-Altaians, some being settled agriculturists and others nomads. There were also several independent cities, of which Khotan was the most important. One portion of the Aryans emigrated and settled in what is now Wakhan (on the Pamir plateau), the present language of which seems very old, dating anterior to the separation of the Vedic and Zend languages.

CONQUEST BY DIFFERENT RACES, ETC.

In the first century the Chinese extended their rule westwards over Eastern Turkistan as far as Kashgar. Arrival of the Chinese. But their dominion seems to have

been merely nominal, for it was soon shaken off. By the end of the fifth century the western parts fell under the sway of the "White Huns," or Ephthalites, while the eastern parts were under Tangut (Thygun) dominion. The Chinese, however, still retained the region about Lob Nor.

Buddhism penetrated into the country at an early date; but in Eastern Turkistan there were also followers of Zoroastrianism, of Nestorian Christianity, and even of Manicheism. An active trade was carried on by means of numerous caravans. The civilization and political organization of the country were dominated by the Chinese, but were also influenced to some extent by Graeco-Bactrian civilization. Buddhism spread rapidly in the southwest, and the study of Pali became widely diffused. Our information as to the state of the country from the second century to the first half of the seventh is slight, and is chiefly derived from the journeys of the Buddhist pilgrims Fa-hien in 399, Song-yun in 518, and Hwen-t'sang in 629. By this time Buddhism had reached its

culminating point; (in Khotan there were 100 monasteries and 5,000 monks, and the Indian sacred literature was widely diffused); but already there were tokens of its decay. Even then the eastern parts of the Tarim basin seem to have been growing less and less populous. To the east of Khotan, cities, which were prosperous when visited by Song-yun, had a century later fallen into ruins, while their inhabitants had migrated westwards. Legend has it that all the inhabitants of Go-lao-lo-tsia were buried in a sandstorm, and this seems to be but a poetical way of representing a phenomenon which was steadily going on in Eastern Turkistan.

Little is known about these regions during the seventh, eighth, and ninth centuries. Arrival of the Muhammadans. In the seventh century the Tibetan king, Srong-btsan, with the help of the western Turks, subjugated the western part of the Tarim basin. During the following century the Muhammadans under Kotaiba, after several excursions into Western Turkistan, took Samarkand, Ferghana, Tashkent, and Khokand (712-13), and invaded Eastern Turkistan, penetrating as far as Turfan and China. The Chinese supremacy was not shaken by these invasions. But, on the outbreak of internal disturbances in China, the Tibetans took possession of the western provinces of China, and intercepted the communications of the Chinese with Kashgaria, so that they were obliged to send their troops through the lands of the Hui-khe (Hoei-ke or Hoei-hu). In 790 the Tibetans were masters of Eastern Turkistan; but their rule was never strong, and towards the ninth century

The Hui-khe. we find the country under the Hui-he.

Who these people were is somewhat

uncertain. According to Chinese documents they came from the Selenga; but most orientalists identify them with the Uigurs. In the opinion of M. Grigorieff, the Turks who succeeded the Chinese in the western parts of Eastern Turkistan were the Karluk Turks, who extended further south-west up to Kashmir, while the north-eastern parts of the Tarim region were subdued by the Uigurs. Soon Mongolian hordes, the Kara-Kitais, entered Eastern Turkistan (eleventh century), and then penetrated into Western Turkistan, Khiva falling under their dominion.

During the following century Jenghiz Khan overran China,

Jenghiz Khan. Turkistan, India, Persia, Russia, and

Hungary. Kashgaria fell under his rule

in 1220, though not without strenuous resistance followed by massacres. The Mongolian rule was, however, not very heavy, the Mongols merely exacting tribute. In fact, Kashgaria flourished under them, and the fanaticism of Islam was considerably abated. Women again acquired greater independence, and the religious

toleration then established permitted the tenets of Christianity and Buddhism to be openly observed. This state of affairs lasted until the middle of the fourteenth century, when Kashgaria became united under Tugluk Timur Khan. He embraced

Mongol dominion. Muhammadanism, and at the end of the fourteenth century the Muhammadan creed (Sunni doctrine) became predominant throughout Eastern Turkistan, supplanting Buddhism.

Tugluk Timur removed his capital from Aksu to Kashgar, and annexed Bokhara. After his death the country was again thrown into disorder.

Towards the end of the fourteenth century Timur Lang laid waste the Thian Shan mountain system from Lake Zaisan to Kashgar and a portion of the plains, putting the inhabitants to the sword in considerable numbers. The valley of the Yulduz was the meeting place of his armies. Kashgaria was plundered and impoverished to such an extent that it has never since recovered the blow.

The history of Kashgaria, from the fifteenth to the eighteenth century, affords an unbroken record of the fifteenth to the eighteenth century civil war between two religious parties, a struggle of which now the Chinese, and now the neighbouring nomads, took advantage to seize the country for themselves.

Finally, the history of the nineteenth century tells us of the termination of the struggle for independence between the Kashgarians on the one hand and the Chinese on the other. Several times, supported by Musulman adventurers from Western Turkistan, the Kashgarians got the upper hand, and destroyed, almost to a man, the Chinese garrisons and the Chinese settlers; but each time the Chinese with unchanging patience again got the best of it, and signalized their return to power by a series of executions and exactions.

During the fifteenth and sixteenth centuries, Kashgaria was ruled by the numerous descendants of the Uzbak Khans and the Mongol Khans. Tugluk Timur Khan. The administrations of his successors were famous only for their constant struggles together for supremacy. Several times Kashgaria became divided into two independent states, with their capitals at Kashgar and Aksu respectively. The power of these Khans of Mongol race was not particularly lasting, for they in fact often were vassals of the Uzbak Khans, who at this time reigned in Bokhara, Samarkand, Khokand, and Tashkent. The increase of the power of the Uzbak Khans in Western Turkistan usually betokened the decrease of the power of the Mongol Khans in Eastern Turkistan. The

nomads of the Thian Shan always seized the opportunity of the outbreak of dissensions amongst the latter to interfere in the civil war, in which they espoused the cause of one pretender or the other. Not content with plundering Kashgaria, they carried their raids as far as Khokand and Tashkent. These facts gave the Usbaks the excuse for interfering in the affairs of Eastern Turkistan. Thus it was, that in the fifteenth century, under the pretext of punishing the nomad Mongols, they sent an army from Samarkand and occupied Kashgar.

Of all the sons of Jenghiz who ruled Kashgaria during the fifteenth and sixteenth centuries, the most famous was Sultan Said. He succeeded not only in subjugating the nomads of Northern Thian Shan, but in securing his frontier to the south and west on the side of Kashmir and Badakshan. Besides this, in 1531-33 he marched against Tibet with 5,000 men. The approach of winter obliged Sultan Said to halt, for he found it impossible to provision his army. He therefore sent his son Iskander, with 4,000 men, into winter quarters in Kashmir, and he himself remained with the remaining 1,000 in the neighbourhood of Balti. When summer came, Sultan Said once more joined his forces and continued his march to Lhassa, of which he took possession. On the return march to his capital he died not far from the Karakoram pass. His death was caused by the action of the rarefied atmosphere. This was a Ghazavat campaign, *i.e.*, a war against the infidel. It served as the commencement of endless wars entered into by the Khwajas, or leaders of two religious sects, that appeared at this time in Kashgaria.

Appearance of the Khwajas. Religious tolerance prevailed in Eastern Turkistan up to the seventeenth century; Buddhism, Muhammadanism, and Christianity were in vogue.

In the fourteenth and fifteenth centuries Bokhara and Samarkand became centres of Musulman learning. In the fifteenth century religious intolerance spread thence to Kashgaria, and the bigotry engendered bloody wars and economic paralysis which, coupled with her wars with China, brought Kashgaria to her present condition. Two sects were formed, known as the Ak-Taulins (the White Mountaineers) and Kara Taulins (the Black Mountaineers), divisions which still exist. The leaders of either spiritual party sought for political authority, and in pursuit of this object, they not only divided the country into two hostile camps, but from personal motives gave it first into the hands of the Zungars and then of the Chinese.

Appak Khwaja, head of the Ak-Taulins, quarrelled with Khan Ismail, Jenghiz Khan's youngest son, the ruler of the country. He obtained the support of the Dalai Lama, the spiritual leader of all Asiatic Buddhists, and from purely personal motives, yielded up his native land to the yoke of the Zungars, who seized Kashgaria in the year 1678, and held it for 78 years, *i.e.*, until they gave place to the Chinese, who were likewise invited by Burkhan-Eddin, one of the White Mountain Khwajas.

The Zungars, or Kalmuks, are a Mongol race, and at that time dwelt in the valleys of the rivers Ili, Tekes, Kunges, and the two Yulduz.

Taking advantage of the fall of the Mongol dynasty of Han in China, the Zungars, in the beginning of Haldan Bokoshta. the seventeenth century, concluded an alliance, at the head of which they placed Haldan Bokoshta, a Khan of the Tchoross line. He incorporated in his dominions the Mongol branch of Olëts, and after that the Zungars for some time called themselves Olëts, and their Khans Oirats.

During the administration of the Khan Haldan Bokoshta, the The Zungars. Zungar sovereignty embraced the vast country bordered on the north by Siberia, on the east by the possessions of the Mongol Khan of the Khalkhas tribe, on the west by the Kirghiz steppes as far as Lake Balkash, and, lastly, on the south by Eastern Turkistan (*i.e.*, by the line of Kuchar, Karashar, and Kunya-Turfan).

The Zungars (Kalmuks) were at this time divided into four tribes, *viz.*, the Tchoross and Torguts, the Khoshuts and Durbats. This division has been preserved to the present day. Each tribe is ruled by its own Khan, subject to the authority of the Tchoross Khan, who is over all.

The period of the independent existence of the Zungar sovereignty was taken up with endless wars with the Chinese, but these wars did not hinder the Zungars from adding Eastern Turkistan as well as Tibet to their dominions. Subsequently, owing to the treachery of the Kalmuk leader Amursana and the existence of internal discussions in Zungaria, the Chinese took possession of the above countries without opposition.

During the rule of the Tchoross Khans in Zungaria, and especially of Haldan Bokoshta, the country enjoyed great prosperity. Huge herds of camels, horses, and sheep covered the rich pastures in the valleys of the Eastern Thian Shan. The capital of the country was at Ili, whence the Khans governed their numerous nomad subjects.

Appak Khwaja, on the advice of the Dalai Lama of Lhassa, turned for aid to Haldan Bokoshta against Appak Khwaja's intrigues. Ismail, the Khan of Kashgar, the leader of the party opposed to his own. Khan Haldan immediately seized so favourable an opportunity for interference, and took possession of Kashgaria in 1678. He appointed Appak as his deputy, and returned to the river Ili, taking with him as prisoners the family of the Kashgar Khan. Haldan received a tribute of 400,000 tengas a month (£62,500 a year). Appak Khwaja, seeking to free himself from the stigma attached to him as betrayer of his country, invited the brother of Khan Ismail to Kashgaria—a step which led both to his death and to bloody struggles between the Khwajas, until the Chinese, by taking possession of the country, put an end to civil war for a time (till 1825).

In 1720 Tsapan Raptan, who succeeded Haldan Bokoshta on the Zungar throne, assigned the administration of the six towns of Kashgaria to Daniel Khwaja. They were—Kashgar, Yangi Hissar, Yarkand (capital), Khotan, Aksu, and Kuchar. On his death his eldest son received Yarkand, his second Kashgar, his third Aksu, and his fourth Khotan.

On the death of Haldan Shirin in 1774, internal dissensions caused Amursana, a distant relation, and chief of one of the Kalmuk tribes, to declare himself and his tribe Chinese subjects, and a Chinese Army being sent into the country, Amursana succeeded in persuading the chiefs of the Kalmuk tribes to go over to the Chinese.

By intrigue with the Khwajas of Kashgaria, Amursana (after Chinese conquest of Kashgaria by intrigue.) a bloody war, conducted by Burkhan Eddin of the Ak-Taulins, who had acknowledged their fealty to China) was the means of adding Kashgaria to the Chinese dominions, and the latter were thus enabled to obtain in a few years, with very insignificant means, dominion over two vast states. The advantage obtained by the Chinese in the conquest of Kashgaria, and of Zungaria, consisted in the better security of the western frontiers of China; but, above all, in the opening up of markets for the sale of Chinese products, especially tea.

The Chinese, by not maintaining a sufficient army in these countries, held very insecure tenure of both, and in 1757 a rebellion broke out. A Chinese Army re-occupied Zungaria without opposition, but in 1758 partial risings caused a terrible slaughter of Kalmuks, without respect of age or sex and about 1,000,000 persons perished. The Zungar sovereignty now ceased to exist, and became parcelled out into seven circles. Of these, Ili, Tarbagatai, and Kurkara-usu

formed the province of Ili. Barkul and Urumchi were added to the province of Kansu and the other two circles, Kobdo and Ulyasutai, received a separate administration. On the site of the Zungar Khan's place of abode, the Chinese built the town of Kuldja, and introduced into the country military settlers of Mongol races, soldiers of the green standard, from the frontiers of Manchuria, Sibs, Solons, and Daurs. Criminals and vagabonds who possessed no lands in China also emigrated to the same place.

To this period, in all probability may be ascribed the deportation Chinese Mussulmans or Dun- by the Chinese of Musulmans, known gans. under the name of Dungans, from their western provinces, Kansu and Shansi, into Zungaria. Besides this, during the year 1771, the greater portion of those Kalmuks who had gone to Russia in the beginning of the seventeenth century with Khan Ho-uluk, returned to Kashgaria. Finally, the Chinese, during the last collisions with Eastern Turkistan, deported a portion of the population of that country to Zungaria, where they became known under the name of Tarantchis.

After the subjugation of Zungaria the Chinese at once turned The Chinese again march their arms against Kashgaria with the against Kashgaria. object of quelling the rebellion, or, to speak more correctly, with the object of conquering the country, since the campaign of Burkhan Eddin, with a few hundred Chinese and Kalmuks, had not yet obliged the population to acknowledge Chinese supremacy. The result of the campaign was the re-occupation and thorough conquest (1758) of the country by the Chinese. The weak opposition displayed shows how meagre was the patriotism and bravery of its population, and also how dissatisfied was the population with the rule of the Khwajas. It may be conjectured that the people who surrendered large towns to their enemies without a fight, counted on the attainment of quiet in exchange for subjection to a foreign and hated dominion—a quiet such as the inhabitants of Kashgaria had been long without.

At this time (1758) Kashgaria consisted of 13 small towns and 16,000 villages and farmhouses, besides the Alti-Shar. A census of Kashgaria showed that the population consisted of 50,000 to 60,000 families, or about 375,000 persons, besides those who had taken flight with the Khwajas, and 12,000 political offenders, condemned to exile at Ili, who were employed in agricultural operations. During the reign of the last Khwaja, Kashgaria paid as tribute to the Zungars 20,000 ounces of silver and 2,564 batmans of bread.

In 1765 a rebellion took place in the town of Utch Turfan, owing to the severity and inefficiency of Depopulation. the Chinese officials. It was soon quelled and the inhabitants were massacred by the Chinese.

For sixty years peace reigned, but in 1825 Khwaja Jhangir, with a handful of men, destroyed in a few months, what had been accomplished by the Chinese in sixty-one years. The Khwajas were executed; the people were allowed non-interference in their religion, their tribunals, and customs; but 12,500 persons were banished to Ili as political offenders, and their lands confiscated to the State. Small garrisons were scattered throughout the country, which was divided into circles for administrative purposes. Taxes, and the method of their collection, and the administration of justice, remained as in the time of the Khwajas.

The population of Kashgaria for the period from 1760 to 1825 is believed to have been between 600,000 and 1,500,000.

The amount of the taxes paid yearly by the inhabitants between the dates above given was as follows:—

Revenue of Kashgaria.	Kashgar Circle, £9,000; 6,120,600lb of grain; 10,000 pieces of <i>mata</i> .
	Yarkand Circle, £10,000; 60,000 pieces of <i>mata</i> ; 1,400 woollen bags; 1,300 hanks of rope; 3,960lb of copper; and 19,800lb of cotton.
	Kuchar Circle, 864,000lb of grain; 927lb of copper; 270lb of saltpetre; and 396lb of brimstone.

On converting the value of these products into money, we shall find that the taxes of the Kashgar and Yarkand Circles together amounted to £27,250, and assuming the taxes of the Aksu, Khotan, and Kuchar Circles at the approximate value of £26,250, we shall arrive at a total of about £53,000, or £37,500 in money and £15,500 in products.

The Chinese devoted the whole of the taxes which they raised in Kashgaria to the maintenance of their garrisons, and to the general administration of that country. They exported from Kashgaria to Kuldja only *mata*, copper, brimstone, and saltpetre.

The total strength of the forces which the Chinese maintained Strength of the Chinese forces in Kashgaria can only be approximately given. The strength of the garrisons of the several towns was roughly as follows:—

In Kashgar from ..	..	6,000	to	10,000	men.
„ Yarkand „ ..	..	2,000	„	3,000	„
„ Khotan „ ..	..	2,000	„	3,000	„
„ Aksu „ ..	..	3,000	„	4,000	„
„ other places „ ..	..	4,000	„	5,000	„
TOTAL	..	17,000	to	25,000	men.

To these troops, composed of Chinese and Manchus, must be added the regiments recruited from the Dungans. The number of these was from 10,000 to 15,000. Therefore, the total number of Chinese troops in the country amounted to from 27,000 to 40,000 men. The principal part of the Chinese forces consisted of infantry, armed with bows or flintlock muskets.

Certain degrading marks of respect were exacted: all Musal-
Marks of respect required by mans had to dismount on meeting a
Chinese official. Chinese official in the streets; during the

Amban's tour round the city, all had to kneel, and if the Ambans went to a pagoda all the Musulman officials had to kneel at the entrance with their arms folded behind their backs.

Having conquered Zungaria and Kashgaria with such ease, the Further progress by the Chinese now became bellicose. During Chinese. the years 1756, 1758, and 1760, their forces penetrated to the steppes of the Middle Horde and compelled the Khans of that horde to acknowledge Chinese sovereignty. After that, both the Khans of the Lesser Horde and the Elders of the Burut section of the Kara-Kirghiz, following the example of the Middle Horde, acknowledged their supremacy, and were then obliged to pay a yearly tribute of one horse and one ox in every hundred, and one sheep in every thousand. In order to collect this tax, the Chinese despatched yearly four detachments, whose duty it also was to uphold Chinese influence in the Kirghiz country.

Two detachments were sent from Ili, one from Tarbagatai Routes taken by the Chinese and one from Kashgar. The Tarbagatai detachment united with one of the two from Ili in the valley of Ayaguz (between Kopal and Sergiapol). The second detachment from Ili then united with the detachment from Kashgar in the valley of Naryn. These detachments, having exchanged the tribute collected, returned homewards. Chinese merchants generally accompanied these forces in order to barter their wares for cattle, taking care, of course, to profit by the exchange with the semi-barbarous Kirghiz.

After the Kirghiz Khans, the Khokand rulers, Erdenya Bai and his heir, Narbuta Bai, declared The Kirghiz Khans acknowledge the sovereignty of the themselves under the protectorate of the Chinese. Bogdi Khan. Such swift successes caused

the Chinese to be regarded as invincible, and made their name terrible throughout Central Asia.

Flushed with their successes the Chinese seriously began to think of the conquest of Bokhara, Samarkand, and Tashkent. Tidings of the preparations for this campaign quickly

The Chinese contemplate the conquest of Bokhara, Samarkand, and Tashkent.

reached the Central Asian Khans, and made them, in regard to the threatening position assumed by a common enemy, forget their own quarrels. They, therefore, formed an alliance, which was joined also by Ahmed Shah, the ruler of Afghanistan.

To all Musulman potentates a summons went forth inviting

An alliance is formed between the rulers of these places and the ruler of Afghanistan against the Chinese.

them to participate in the *ghaza*, or holy war, *i.e.*, a war for the faith against the infidel. An alliance was thus concluded in the year 1763, and in the same year

the Afghan forces reached Khojent.

But the league which had been formed soon broke up. The

This league is broken up.

Afghans were obliged to return to their own country, and the remaining chiefs

considered themselves too weak to enter upon a struggle with such a powerful foe. The towns of Utch-Turfan and Badakshan alone held out. The first, having trusted in the promised aid, rebelled, and its inhabitants were slain, as we have already related, by the Chinese forces. With regard to Badakshan, that beautiful country was devastated by the Afghan forces, and its ruler, Sultan Shah, was executed, because he had not only refused to give refuge to those Khwajas who fled from Kashgaria during the siege of the town of Khotan by the Chinese (in the year 1758), but had also killed two of the Khwajas who were taken prisoners and sent their heads to Pekin.

The Chinese, perceiving the weakness of the Central Asian

Mistakes committed by the Chinese in the administration of Kashgaria.

rulers, raised their heads still higher. The wise policy adopted towards the conquered people, and the administration of

the country on the system first founded, ceased by degrees to be considered indispensable. Amongst other mistakes to those that were committed must be classed the appointment to the town of Kashgar of a Hakim-Beg and other officials from the western provinces, and compelling the people to erect, without payment, vast fortifications called *gul baghs* for the occupancy of the Chinese garrisons.

The officials introduced from the western provinces of China, from the towns of Hami and Kunya Turfan, came with the intention of gaining a lucrative livelihood, and they did not shrink from employing every means to attain this object. From the Hakim-Beg down to the lowest official, all looked upon the people as fair game for plunder. The flagrant exactions on the part of the Hakim-Beg was known to the Chinese authorities, and since they permitted him to continue it, they, in all probability, themselves

benefited by his actions. Every protest and every act of disobedience was punished by death, and so the people became still more exasperated. The more energetic amongst the population began to emigrate to Khokand, Bokhara, and Tashkent, where by their stories of the excesses of the Chinese, they everywhere excited sympathy for their native land.

In 1816 the Khwajas who had found a refuge in Khokand began to disturb the peace of Kashgaria, whereupon the Chinese entered into an arrangement with the Khan of Khokand for the suppression of all the Khwajas in his territory.

In 1826 Jhangir Khwaja obtained considerable successes, occupying Kashgar, Yangi Hissar, Yarkand, Khotan, and slaying the Chinese garrisons. In 1827 a Chinese army, having collected at Aksu, drove him into the mountains, where two columns pursued him, one moving to the Altai, thence by Ulugchat and the Taun Muran pass, and the other by the town of Upal, Lake Sari Kal, and the Kizil Art pass. He was given up by treachery, taken to Pekin, and executed.

Executions, plunderings, and confiscations of property followed the revolt, and several thousands of Kashgarians migrated into Khokand territory.

To revenge themselves on the Khokandis, a blockade was established, whereby all trade with them ceased. This so affected them that their ruler, Madali Khan, espoused the cause of Med Yusuf, Jhangir's eldest brother, and collecting 20,000 Khokandis, 15,000 Tashkendians, etc.,—in all, 40,000 men and 10 guns,—he invaded Kashgaria, captured Yangi Hissar, Yarkand, Khotan, and Aksu, and occupied them for nine months. Kashgaria, encircled by the Khokand dominions, was constantly threatened by an inroad of Khwajas or a raid of Kara-Kirghiz. Feeling themselves in no position to fight with Khokand, a treaty of peace was concluded with them by the Chinese in 1830 the favourable terms of which show how much the Khwajas were feared by them. By it they secured a peaceful administration in Kashgaria for fifteen years.

In 1847 the weakening of the Khokand Government under the infant Khudoyar Khan led to internal commotions, taking advantage of which Katta Tura and six Khwajas fled from Khokand and gained over the town of Kashgar by intrigue with the Khokandi Aksakal, slaying the Chinese merchants, plundering their goods and appropriating their harems.

The Chinese collected an army numbering 200,000 men from Kuldja, Urumchi, and Lianchau, and marched to Fort Maralbashi. Fearing to encounter it with a motley gathering of 18,000

men, the Khwajas fled the country, and with them 20,000 families from Aksu, Kashgar, and Yarkand.

This flight, which took place in the month of January, chiefly by the Terek Davan pass, was accompanied by great loss of life from the severe cold.

The Chinese again re-established their authority in Kashgaria, Re-establishment of Chinese authority. and displayed their weakness by renewing their treaty with the Khokandis.

In 1857 Wali Khan Turya occupied Kashgar; on the inhabitants rising, he massacred the Chinese garrison and the Chinese merchants. Surrounding himself with Khokandis, he treated the natives with disdain, imposed on them heavy taxes, exacted of them labour on earthworks, and introduced social reforms most distasteful to the people,—forbidding their women appearing with unveiled faces, or wearing plaited hair, and directing the men to wear turbans, and attend the mosque five times a day,—and displayed great cruelty in their enforcement, executions being of daily occurrence. In 1857 the Chinese re-occupied the city, to the joy of the inhabitants, the Khwaja flying to Khokand, and with him 15,000 families.

The Chinese reprisals were severe: all who had participated in the rebellion were killed, property was confiscated, etc. The Kalmuks especially were foremost in the perpetration of every kind of cruelty. Thus ended the fourth attempt of the Khwajas to restore their sovereignty in Kashgaria. On this occasion the attempt only led to still greater loss to the country, and to the execution of several thousand people, who were, for the most part, innocent. On this occasion, too, the principal offenders and participants saved themselves, and carried off their plunder, leaving the people, whom they had deceived, as victims in the hands of the Chinese.

After driving out Wali Khan Turya in 1857, and again possessing themselves of the whole of Kashgaria Musulman insurrection. the Chinese did not long enjoy their victory. The Musulman insurrection in the western provinces of China—Shensi and Kansu—quickly spread until it embraced the whole of Zungaria, and afterwards, in 1862-63, Kashgaria. The Chinese were in a desperate condition. Many hundreds of thousands of them perished, and yet with unconquerable obstinacy, step by step, during the course of thirteen years, they put down an insurrection that had spread from the Wei valley to Ili and Khotan. In the year 1877 their armies besieged the town of Urumchi, and

opened a campaign against Yakub Beg, their most talented and powerful opponent.

The Musulman population of Western China is grouped in the Musulman population of China: provinces of Shensi and Kansu, and Its origin. numbers over 5,000,000. The origin of these Musulmans is variously accounted for. According to some the date of their settling in the provinces of China goes back to the eighth or ninth century, when the Chinese, after subduing the Uighur state, deported 1,000,000 people to their deserted western provinces. In course of time, these Uighurs embraced the Musulman faith, and through inter-marriage with Chinese damsels, lost their primitive type, and now bear but little resemblance to their kinsmen who remained in Kashgaria. The same Musulmans who peopled the western provinces of China afterwards formed the bulk of the people of Zungaria. The people of Kashgaria, who are alien to these Chinese Musulmans, begin on the west of Fort Karashar and the town of Khurla. They take the name of the locality in which they dwell; thus, we find Karasharians, Aksutians, Yarkandis, and Khotanis. The Chinese call their Musulmans Hoi-hoi-tsian.

In Kashgaria, the same Chinese Musulmans are known under Dungans: The derivation of the name of Dungans, and the insurrection which they initiated is called the "Dungan insurrection." The derivation of the word "Dungan" is not exactly known. According to oral tradition, the derivation of this name is sometimes traced to the epoch of Alexander of Macedon; at others to the days of Jenghiz Khan or Timur Lang. It is thought, too, that in the movement of bands of these popular heroes from the east to the west, and from the west to the east, many of their soldiers remained behind, and consequently received the name of Turgan, which means "those left behind."

The rising began in the year 1861, during the last year of the rule of Sian-Fwin, in the province of Shensi, and spread to the province of Kansu and then to Zungaria.

The insurrection was signalised by the dreadful, and in places, the total destruction of the Chinese. The first attempts of the Chinese Government to suppress it were not attended by success. On account of the extortions of the officials, and the privations to which they were subjected, the Chinese detachments would sometimes go over to the side of the insurgents. The Chinese garrisons were obliged to shut themselves up in the citadels, and the insurgents, who were thus free to pour over the whole of the disaffected country, everywhere slaughtered the Chinese population. The hatred of the Chinese was so great that, according to

M. Sosnovski, Musulmans would themselves slay their own wives and children to prevent them falling into the hands of the Chinese. The same author tells us that the Chinese amply repaid the debt, for they mercilessly wiped out their enemies. On the occasion of the siege of the town of Ho-chow, which lasted for seven months, 20,000 men were put to the sword by the Chinese, on the fall of the place. Similarly, at Si-ning-fu, and at Gur-ki-pu, 9,000 and 50,000 men were slain respectively, whilst a vast, fruitful, and thickly-populated tract was turned into a desert. Rich towns became heaps of ruins.

From the date of appointment in 1868 of Tso-Tsun-Tang as Governor-General of the provinces of Kansu, Shensi, and Zungaria the action

Energetic action of the Chinese. of the Chinese became energetic and swift. Being aware, as M. Sosnovski tells us, that disorder principally results from extortion, he selected trustworthy officials and made his soldiers contented; he also built a factory at Lanchow-fu and turned out breech-loading steel guns and rifles on the newest system. The centres of the insurrection were gradually occupied by Chinese forces; and in January of the following year the road from Lanchow *via* Hami and Gu-chen to Chuguchak presented an unbroken line of Chinese forts, whilst the rising in the provinces was crushed, except that small bands of Dungans continued to wander about.

The tidings of the success of the insurrection of the Chinese
Effect of the first successes of the rebels. Musulmans in Zungaria, Shensi, and

Kansu, quickly spread to Kashgaria, and caused the population of that country to rise against the Chinese. The Chinese garrisons were weak, and what was more important, were principally composed of Dungan soldiers, who, on the first intelligence of the rebellion of their kinsfolk, took up arms against their employers, and with the aid of the local population, massacred the greater part of those Chinese who did not contrive to shut themselves up in citadels. The rebellion was first discovered in the town of Kuchar. One of the inhabitants of this town,

Rashiddin Khwaja. Rashiddin Khwaja, who was the first to proclaim a *ghazavat*, or holy war, in the year 1862, collected the people, and placing himself at their head, conducted an attack on the Chinese garrisons. The Chinese were slain, whereupon Rashiddin sent his emissaries to all the towns of Kashgaria to rise against them. The Dungans joined the insurrection, and with their aid the Chinese garrisons in the towns of Kashgar, Toksun, and Kunya Turfan were slaughtered. The people then recognized Rashiddin's sovereignty and proclaimed him Khan. Isa Khwaja, Rashiddin's relative, was appointed Governor of the

above mentioned towns. Rashiddin's two other relatives, Djalat-eddin Khwaja and Burkhan-eddin Khwaja, set out for the towns of Aksu, Kashgar, Yarkand, and Khotan, in order to exact from them acknowledgment of Rashiddin's title of Khan. Before their arrival an insurrection had burst forth, and the Chinese garrisons had shut themselves up in the citadels. The people of Aksu were the first to recognize Rashiddin's claim. One Sadik Beg,

Sadik Beg. of Kipchak origin, was at that time an influential person in the town of Kashgar.

After going out with his adherents to meet the Khwajas, he recognized Rashiddin as Khan, and his example was followed by all the inhabitants of the town of Kashgar. Having appointed Sadik Khan, Hakim of the town, the Khwajas continued their journey to Yarkand.

The commander of the Chinese forces composing the garrison of Yarkand, perceiving the murmuring amongst both the inhabitants of the town and the Dungan soldiers who formed part of the garrison, decided upon disarming the latter. News of this intention quickly reached the Dungans, and caused them to rise in rebellion. At night, they broke into the citadel, which contained the Chinese garrison, consisting of 2,000 men. These they slew, together with their families. A small body of Chinese escaped by beating off their assailants and regaining possession of the citadel. In the morning the Dungans rushed into the town and aided by the inhabitants, plundered the houses and shops of the Chinese after killing the owners. It was evident, however, that the emis-

Failure of Rashiddin's mission to Yarkand and Khotan. saries from Aksu obtained no great amount of success in this place, the inhabitants of which chose as their ruler Hazrat Abdur Rahman, an old Mulla. They also appointed as his assistant the former hakim of the town, Niaz Beg. The inhabitants of Khotan followed the example of the Yarkandis, slew the Chinese, and chose as their ruler Habibulla, who was also a Mulla, and had lately returned from Mecca. This man assumed the title of *padshah* (king), and began to coin money in his own name.

Places in Kashgaria left to the Chinese at the close of 1863. At the close of the year 1863, the only places that the Chinese held in Kashgaria were the citadel of Kashgar, the town of Yangi Hissar and the citadel of the town of Yarkand. Detachments from Aksu and Yarkand were sent against the last mentioned, and a force of Dungans was despatched to the aid of these detachments. Nevertheless the citadel long withstood all the efforts of the besiegers, and when all the means of defence had failed, the Chinese Commander and all his garrison heroically blew themselves up (winter, 1863). This was also the fate of the garrison of Aksu.

After this victory the Aksu Khwajas again demanded from Division of authority at the Yarkandis the recognition of Rashid-din's authority. The inhabitants would not consent to the demand. At length, after a long dispute, the government was divided between Abdur Rahman and the Khwaja Burkhan-eddin. The former was supreme in the town, the latter in the fort, where were quartered the Dungans and some troops from Aksu. This state of things lasted until the time of Yakub Beg.

In the beginning of the year 1864 Rashidin's rule was recognized throughout the whole of Kashgaria, Extent of Rashidin's authority in the beginning of 1864. with the exception of the town of Khotan.

The ascendancy of Rashidin was, however, but short lived. On the invitation of a considerable portion of the population, Buzruk Khan, son of Jhangir, who was then living at Tashkent, advanced on Kashgar with a force of 400 Andijanis. Yakub Beg, of Khojent, who in early life had been a *batcha* or public dancer and had later gained distinction in fighting against the Russians in Khokand, was put in command of Buzruk Khan's army.

Buzruk Khan was received with open arms by the inhabitants of Kashgar and was proclaimed Khan.

The recognition by the inhabitants of Kashgar of Buzruk Rashidin Khwaja opposes as Khan, coupled with his pretensions, Buzruk Khan. as descendant of Appak Khwaja to the sovereignty of the whole of Kashgaria, called forth the opposition of Rashidin Khwaja, who was ruler of the country to the east of the town of Aksu, whilst Abdur Rahman was ruler of Yarkand. The inhabitants of Aksu, Kuchar, Yarkand, and Khotan, whilst bearing in mind the inroads of the Khwajas of the Appak clan, Jhangir Katta Turya, and Wali Khan Turya, could scarcely be reckoned on to make a new attempt in favour of Buzruk. Forces, both from Aksu and Yarkand, advanced almost simultaneously on Kashgar with the object of driving out Buzruk, whose position had become critical. It was only owing to the energy

Buzruk Khan's position is of Yakub Beg that he was able to hold secured by the energy of Yakub Beg. his own. Leaving a small but well-equipped force to watch the citadel, Yakub

Beg went out to meet the army from Aksu, and having defeated it at Khan Arik, energetically pursued its broken forces up to the hamlet of Yangiabad. After this he returned and advanced against the Dungans and Yarkandis, who were still several marches from Kashgar. An engagement took place, at Tozgun. In speaking of the fight, eye-witnesses have exaggerated the enemy's forces by several thousands of men. According to their accounts, the Dungans

approached to within a very short distance of Yakub Beg's troops, and then directed against them a well-aimed fire, which caused great

Yakub Beg defeats the Aksu loss. Yakub Beg at once ordered his and Yarkand troops sent against cavalry to attack the enemy's flanks. him.

Having thrown the enemy into confusion by this manœuvre he moved forward the rest of his troops and won the battle.

It is stated that Yakub Beg received three wounds in this engagement, and that he concealed the fact till the end of the fight, lest he should have depressed the spirit of his soldiers by appearing to be hurt. Following the routed enemy to the town of Yangi Hissar, he took that place by storm after a siege that lasted forty

Captures Yangi Hissar. days. The greater part of the inhabitants and of the garrison perished in the siege

and the assault. About 200 soldiers and women and children turned Musulmans, and thereby saved their lives. After the capture of Yangi Hissar, Yakub Beg sent envoys, bearing gifts and the news of his victory to Alim Kul, the Governor of Khokand and Tashkent who was at the time engaged in fighting the Russians. The envoys never even saw Alim Kul, for before they came to Khokand, tidings reached them that Alim Kul had been slain on the 21st May 1865, in a battle with the Russians before Tashkent. The death of Alim Kul called forth new dissensions in Khokand, all of which indirectly served as a means whereby Yakub Beg's position became still more assured. A large body of Kipchaks fled from Khokand by the Terek Davan pass.

Yakub Beg gradually put Buzruk Khan on one side, and during the year 1866-67, united under one sovereignty the circles of Kashgar, Yangi Hissar, Yarkand, and Khotan and became Khan, with the title of Badaulat, or "the fortunate one." By treacherously murdering Rashiddin and occupying Kuchar, all the towns of the country with a Kashgarian population became united.

A boundary line was agreed upon with the Dungan chiefs, which passed through Ushag Tal, 33½ miles to the east of Fort Karashar. This limit is the natural one, and it would have been well had Yakub Beg not attempted to extend his dominion beyond it.

The Dungans of Kunya Turfan, Urumchi, and Manas, refusing to respect the boundary, advanced in considerable numbers as far as Kuchar, sacking Khurla, and capturing Karashar and Kuchar. The Dungans had received great accessions to their numbers from their co-religionists of Kansu and Shensi.

Collecting his forces at Aksu, Yakub Beg advanced on Kuchar, defeated the enemy near Bai, Ching, and the hamlet of Rushtam,

and occupied Kuchar. At Danzil, between Khurla and Karashar the Dungans were finally completely defeated.

Advancing against the defeated Dungans, Yakub Beg gained possession of Kunya Turfan and then of Urumchi, 1869-70. His army numbered 11,000 to 15,000 men, the Dungans putting 20,000 men in the field. Some accounts state that Yakub Beg in this campaign was aided by 8,000 Chinese under Shusha Hun.

Returning to Aksu, he made it his capital, and during the next five years devoted his time to consolidating his power, and gradually extending his frontier towards Khokand, occupying Ulugchat, Nagra Chaldi, Eghin, and Irkeshtam.

In 1872 Dungan revolts in the towns of Urumchi and Manas were suppressed by Bek Kuli Beg, the Badaulat's son. From 1872 to 1876 quiet reigned in Kashgaria. Meanwhile the Chinese having put down the Dungan rebellion in their western provinces, advanced against Urumchi and Kunya Turfan, re-occupying Manas and Humatai. As the Chinese advanced, thousands of Dungan families abandoned their abodes and joined Yakub Beg, who raised amongst them a body of 10,000 men.

The army of Yakub Beg could in no sense be compared with a European army. Hence it is only possible to compare it with those of other Asiatic potentates. In organization, it was more heterogeneous than, for example, the army of Bokhara. In armament and training it stood perceptibly higher than the forces of the Central Asian Khanates. In comparison with the disorderly and badly-equipped bands of horsemen of Central Asia the Kashgarian cavalry was especially good.

Whereas Yakub Beg had already made every effort to bring together all his forces for the fight, the strength of the Chinese forces was increasing every month.

Kashgaria was capable of furnishing the material necessary to clothe her troops, and to arm and equip them, with the exception of iron. Yakub Beg established workshops for the production of uniform, equipment, and arms, also powder factories, and magazines.

Resources of Kashgaria. In the arms factories he employed several Afghans and Hindus; long and short-barrelled Enfields were turned out. A few inferior cannon were cast of copper procured from the Aksu circle. Powder was manufactured in all the large towns. Lead was chiefly obtained in the Kashgar circle, and sulphur in the Kuchar circle. Saltpetre was obtained from Bai and Dan-Lanza, between Khurla and Karashar. Coal was procurable on the same road. Percussion caps were

prepared in Kashgar. Flintlock muskets, rifle cartridges, and sabres were manufactured by private enterprise.

Yakub Beg's advanced posts. In March 1877 Yakub Beg's advanced posts were the following :—

Kunya Turfan, which was held by Hakim Khan Turya, with a force of 1,000 sarbazais and levies.

Toksun, which was held by Hak Kuli Beg, Yakub Beg's youngest son, with a force of 6,000 jigits and sarbazais.

Fort Diwantchi, the most advanced post, which was held by 900 jigits, armed with breech-loaders.

The small range of the Diwantchi hills separated the combatant Chinese advanced point. forces. Urumchi was the most advanced Lowering of the *morale* of point held by the Chinese. In it they Yakub Beg's army and the had 6,000 men. The winter of 1876-77 desertion therefrom. had lowered the condition of Yakub Beg's army, especially in regard to its *morale*. Desertion had begun to spread rapidly, even amongst those persons on whose devotion Yakub Beg had always depended.

The Chinese received deserters very kindly and nominated them to various posts in the country of Kashgaria.

On the 15th April 1877 the Chinese to the number of 4,000 *The Chinese advance.* marched from Urumchi to Fort Diwantchi, to which they laid siege. The garrison, numbering 1,300 men, surrendered after a poor defence, which lasted for three days.

When they moved from Urumchi to Diwantchi, the Chinese made a demonstration from the town of Hami towards Kunya Turfan : 2,000 armed inhabitants held this place, and they surrendered to the Chinese without firing a shot.

Hakim Khan Turya just succeeded in getting off with a handful of soldiers to Toksun where he joined Hak Kuli Beg.

The detachment then under the command of the latter was composed of 4,000 jigits and sarbazais, and 6,000 armed inhabitants.

On hearing of the advance of the Chinese, Hak Kuli Beg sent Hak Kuli Beg retreats to to his father, who was at Khurla, for Karashar. permission to send reinforcements to Diwantchi and Kunya Turfan, but before an answer could be received these places had already fallen, and Hak Kuli Beg retreated with his whole force to the town of Karashar, fearing that he would be cut off from the Subashi pass.

Lu Tcha Darin, the commander of the Chinese forces, treated judicious conduct of the prisoners whom he took at Diwantchi Chinese Commander, Lu Tcha kindly. He released all who were in-Darin, towards his prisoners. habitants of Kashgaria, about 1,000, furnishing them with money for road expenses and with passes.

He further announced that he was only fighting against Andijanis, *i.e.*, the mercenaries from Ferghana and Tashkent; that he had no doubt as to the devotion of the inhabitants of Kashgaria to the Chinese Government, and that in a short time he would endeavour to free them from the extortions of Yakub Beg.

The remaining prisoners, who were natives of other parts of Turkistan, were sent to Urumchi.

The released prisoners came to Karashar, and the rumour of the details attending their release reached the Badaulat. Considering the course of action adopted by the Chinese to be prejudicial to his interests, Yakub Beg resorted to a measure which did him still greater harm, whilst it increased the general sympathy for the Chinese. He sent directions to his son Hak Kuli Beg to deprive the released prisoners of all further power of spreading the story of their deliverance. Hak Kuli Beg, in fulfilment of his father's orders, massacred the greater number of these unfortunate persons. The remainder effected their escape and returned to the Chinese. This measure, as might have been expected, produced a result entirely opposed to that anticipated by Yakub Beg. The report of this atrocity swiftly spread throughout the whole of Kashgaria, and not only revealed the weakness of the Andijanis, but made them more detested than before. The clemency of the Chinese towards their prisoners was exaggerated in the narration, and served to strengthen the party opposed to Yakub Beg.

The effect of this story, in combination with the general discontent of the people against Yakub Beg, is the only explanation of the subsequent and unusually rapid successes of the Chinese.

On the 28th May 1877, the "Badaulat" became greatly exasperated with his secretary, Hamal, whom, he killed with the butt-end of his gun. He then set upon his treasurer, Sabir Akhun, whom he also began to beat. In the struggle he received a blow which rendered him senseless and from the effects of which he died on the 29th May. The stories that Yakub Beg was poisoned by his son Hak Kuli Beg, and that he himself took poison in consequence of his defeat by the Chinese, are devoid of foundation.

On the day of Yakub Beg's death, Hak Kuli Beg came to Khurla from Karashar. For three whole days he told no one of his father's death. During this period all the troops at Karashar were recalled to Khurla.

Having collected his forces at Khurla, Hak Kuli Beg informed Hak Kuli Beg announces the them on the 1st June of the death of their event to his troops, and goes to sovereign, and declared that it was his Kashgar. intention to go to Kashgar, to consult with his elder brother, Bek Kuli Beg.

Having issued two months' pay to the army during his absence, and appointed Hakim Khan Turya as his deputy, Hak Kuli Beg set out for Kashgar on the 6th June.

It was generally reported that Yakub Beg intended his younger son, Hak Kuli Beg, to succeed him. The latter was popular with the army but the people of Kashgar sided with his elder brother, Bek Kuli Beg. Evidently Hak Kuli Beg's object in going to Kashgar was to proclaim himself ruler.

On the day after Hak Kuli Beg's departure from Khurla, the The troops at Khurla pro- troops in that town assembled and pro- claim Hakim Khan Turya, claimed Hakim Khan Turya, Khan. The Khan of that place. latter immediately sent off a Kipchak, Dash Beg by name, with 500 horsemen in pursuit of Hak Kuli Beg, with orders to prevent him seizing the treasury at Aksu.

On the 23rd June, Hak Kuli Beg with 30 attendants, left Hak Kuli Beg is slain at the Aksu for Kashgar. When still 50 miles instigation of Bek Kuli Beg. distant from that town, near Kupruk, at the bridge over the Kizil Su, Hak Kuli Beg was treacherously slain by Muhammad Zia, Pansat, who had been sent by Bek Kuli Beg to meet him.

According to another story, Bek Kuli Beg personally shot Hak Kuli Beg, with a revolver when they met. He at the same time ordered all Hak Kuli Beg's followers to be slain.

In consequence of these events Kashgaria became divided into three parts, each of which had a separate ruler at its head. In Kashgar Bek Kuli Beg was supreme; in Aksu, Hakim Khan Turya; and in Khotan, Niaz Beg. These three began to fight amongst themselves. Bek Kuli Beg proved himself the most powerful and Bek Kuli Beg advances energetic. Having collected a force of against Aksu. 5,000 men, he advanced against Aksu. Hakim Khan Turya, collected a body of 4,000 men, and went to meet him. Near Yaida (Jaida), between Maralbashi and Aksu, the advanced guards had a skirmish, in which the Kashgarians were defeated and pursued as far as Tchul Kuduk (Shur Kuduk). Three

days afterwards Bek Kuli Beg concentrated his forces at the last named place, whilst Hakim Khan Turya's main body was at Yaida. Between these two places a decisive battle took place, which

Hakim Khan Turya's forces are defeated, and he flies to Russian territory. His army surrendered to Bek Kuli Beg.

On the 13th August Bek Kuli Beg entered Aksu in triumph. On the 5th September he started on his return journey to Kashgar,

Bek Kuli Beg advances to Khotan. where he gave his troops a month's rest, after which he set out, for Khotan with 5,000 men.

On the 20th October he was met at Zawa by the Khotan army under the leadership of Emin Beg, brother of Niaz Beg. The Khotanis fled on the first charge of the Kashgarian cavalry. Niaz

Niaz Beg's forces being defeated, he flies to Cherchen. Beg, who was at the time in Khotan (Ilchi), 20 miles from Zawa, hearing of his brother's defeat, set out for Cherchen.

The next day Bek Kuli Beg entered the town of Khotan, and sent a party in pursuit of Niaz Beg, but the latter succeeded in effecting his escape.

On the 30th October Bek Kuli Beg received news of the capture of Khurla, Kuchar, and Aksu by the Chinese, and of the retreat of the Kashgarian troops towards Kashgar. On the receipt of this news he sent a messenger to Kashgar for his family, directing that they should be escorted to Yarkand. On the 6th November he himself went to Yarkand, where he found his family. But, meanwhile, still worse news had reached Yarkand. The Chinese soldiers, who had been made Musulmans by Yakub Beg, forced their way into Yangi Shar and shut themselves up in it. This intelligence produced a great

Effect of this news on Bek Kuli Beg, and his followers. impression on Bek Kuli Beg's followers, for many of their families were living in Yangi Shar, and had, therefore, been seized by the Chinese. They began to reproach Bek Kuli Beg, saying that if he had not sent for his own family from Yangi Shar, the Chinese would not have dared to resort to such an extreme measure.

A little before this, Bek Kuli Beg had sent all his infantry from Yarkand to Maralbashi by the direct road, but on the way they all fled. Seeing that his affairs had now become desperate, he started on the night of the 16th November for the town of Karghalik, accompanied by the Hakim of

Yarkand and his own family. But those whose families had been detained in Yangi Shar, stopped him, and demanded that he should go with them to try and recapture this fort.

Bek Kuli Beg was consequently obliged to return to Kashgar.

Bek Kuli Beg's massacre of On arrival at Yangi Hissar, which is half-a number of Chinese boys. way between Yarkand and Kashgar, he gave orders that all Chinese boys at that place should be slain. Two hundred were the victims of this order. At the same time Aldash Datkha, Governor of Kashgar, killed 400 Chinese of both sexes, and of various ages, who had not gone into the citadel of Yangi Shar.

On the 6th December Bek Kuli Beg came to Kashgar and took Bek Kuli Beg arrives at up his abode in a garden, about 2 miles Kashgar. from Yangi Shar. He laid siege to the citadel, with some of his troops and some Dungans who had come to him from Aksu, but his efforts were unavailing.

The garrison of 500 Chinese defended itself heroically; Failure of his attempts to not only were all the assaults repulsed, retake Yangi Shar. but almost every night the Chinese made sorties and inflicted considerable loss on the besiegers.

On the 16th December reports were circulated throughout Bek Kuli Beg's camp that the Chinese were close to Faizabad, 40 miles from Kashgar. Aldash Datkha was sent with a force against them, but after firing a few shots, he retreated. This was the commencement of a general retreat.

A panic seized Bek Kuli Beg's troops, and they fled into Russian territory,—some to Ferghana, through the Terek Davan pass, some to Naryn by Chakmak and Artish. Bek Kuli Beg was the first to give the signal for flight. The same evening a small reconnoitring party sent by the Chinese from Maralbashi The Chinese occupy Kashgar. entered Kashgar.

Bek Kuli Beg's troops were followed by thousands of the Exodus of the inhabitants of Kashgar for they feared a repetition of those atrocities, which had on every occasion attended the appearance of the Chinese after the expulsion of the Khwajas, Jhangir, Wali Khan, and Katta Turya.

These unfortunate people set out for the Terek Davan and crossed the range of mountains bordering it at a time when there were 30° of frost.

There now began a repetition of the horrors which attended the flight of the Kashgarians after Katta Turya's expulsion, when tens of thousands perished from frost and hunger.

Happily for the fugitives on the present occasion, Major Measures adopted by the Russian forces for the relief of the fugitives. Yonoff, an energetic and experienced Turkistani, commandant of the Osh district, in which the Terek Davan pass

is situated, adopted measures for their assistance. He himself, accompanied by his second-in-command, Captain Roselein, set out for the pass, and at once organized measures for the relief of the Kashgarians who reached Russian territory almost frozen and perishing from hunger. The fugitives were warmed and fed, and sent on horses to Osh. All who crossed into Russian territory were saved. The district commander of the province of Semerechensk likewise did all he could to alleviate the sufferings of those fugitives who sought safety in Russian territory.

The inhabitants of Yarkand tried to fly to Sarikol, and even to

The Sarikol Kirghiz prevents fugitives from Yarkand entering their territory. Shignan, but the Sarikol Kirghiz made them go back and gave them up to the Chinese.

On this occasion the Chinese, taught by bitter experience, kept

Altered behaviour of the Chinese towards the people of the country. themselves under comparative restraint. The people were appeased. Musulmans were appointed as headmen of the towns.

Trial by the Code of the Shariát was permitted, and religion was not interfered with. About ten men were executed during the first day of their return. They let the people remain in peace, and turned

Inhabitants of Kashgaria were not permitted to possess horses. their attention, amongst other matters, to the horses. The Kashgarians were forbidden to keep horses, any who disobeyed

this order were executed. In the horses, which had given the Kashgarians the power of moving rapidly over vast tracts, the Chinese saw one of the principal causes of their former defeats.

Since 1877 Kashgaria has remained under Chinese rule. In 1881 the Russians concluded the treaty of St. Petersburg with them by which the former were guaranteed freedom of trade with Kashgaria and Zungaria, they restored the Kuldja district to China, and received the Irkeshtam post in exchange. In 1883 the frontier was fixed, on the basis of the above mentioned treaty, (*vide* Chapter I, pages 3 and 4), as far as the Uz Bel pass, whence, according to the treaty, "the Russian frontier was to go to the south-west and the Chinese frontier to the south."

In 1891, however, the Russians sent a party of about 120 men under Colonel Yonoff, with orders "to travel over the whole of the Pamirs, to clear up the situation, and to establish the rights of Russia to this portion of the inheritance of the former Khokand

Khanate." This detachment, in August, arrested Captain Young-husband, C.I.E., at Bozai Gumbaz and obliged him to return to Chinese territory. For this action the Russian Government subsequently apologized to the British Government.

In 1892 Colonel Yonoff returned to the Pamirs with a larger force. In July an Afghan piquet of 15 men was shot down at Soma Tash, and subsequently all Chinese troops found on the Pamirs were ejected. The party then returned to Ferghana leaving a small Russian post on the Pamirs. From that time the Pamirs have been occupied by the Russians, and the latter say that in 1894, by an agreement signed at St. Petersburg, the Sarikol range was recognized as the Russo-Chinese frontier there.

In 1901, notwithstanding the above mentioned agreement, the Russians established a Cossack post of 5 men under an officer at Tash Kurghan, nominally as a guard to the Russian Agent and for the purpose of protecting their postal communications. In the following year the strength of the post was raised to 15 men and has now been increased to 18.

CHAPTER VIII.

ADMINISTRATION.

[Administrative Divisions ; Administrative system ; Financial system ; Money ; Weights and measures.]

KASHGARIA, as was stated in Chapter I, forms part of the Hsin Chiang province of the Chinese Empire. This province forms part of the Shen-Kan "Viceroyalty," the Tsung-Tu, or Viceroy, of which resides at Lan-chow-Fu, and is also Governor of the province of Kansu.

The Hsin Chiang province is ruled by a Governor, who is called a Hsun-Fu or Fu-t'ai, who resides at Urumchi, the seat of the provincial government. It is divided into the four Tao-t'aiships or divisions of Kuldja, Urumchi, Aksu, and Kashgar, of which only the last two concern this report.

ADMINISTRATIVE DIVISIONS.

The Aksu Tao-t'aiship consists of the whole of the northern oases of Kashgaria, from Karashar to Utch Turfan inclusive, and the Lob Nor basin. The Kashgar Tao-t'aiship includes the whole of Western and Southern Kashgaria as far as the Cherchen oasis inclusive.

Under the Aksu Tao-t'ai are,—the Karashar, Kuchar, Aksu, and Utch Turfan Districts.

The Karashar district consists of the basin of the Bagrach Kul, the oasis of Khurla, the settled portions of the valley of the Konche river, the Tarim below its bend to the south-east, and the Lob Nor basin. It is administered by a Chih Fu or Fu Kuan, who, with his assistant, resides at Karashar.

Under the Karashar Chih Fu is the sub-district of Sin Chen or Dural, which was formed in the year 1899, and consists of the valley of the Tarim between the mouths of the Ugen and Konche rivers (the Kara Kul locality) and the Lob Nor basin. It is ruled by a Hsien Ch'eng, who, with his assistant, resides at Dural.

The town of Khurla is administered by a native Beg.

The limits of the Kuchar district (T'ing) are, on the east the village of Bugur, on the north the Thian Shan watershed, on the west the Kizil and Muzart rivers, and on the south the Tarim.

The T'ung Chih and his assistant reside at Kuchar.

Shah Yar is administered by a native Beg.

The Aksu district is bounded on the east by the Kuchar district,
 The Aksu district. on the north by the Thian Shan watershed, on the west by the Aksu river, and on the south by the Tarim. It is administered by a Fu Kuan or Chou Kuan, who resides at Aksu (new town). There are two sub-districts,—the old town of Aksu, and the Bai oasis, each of which is ruled by a Hsien Ch'eng.

The Utch Turfan district (T'ing) is bounded on the north-east
 The Utch Turfan district. by the Aksu district, on the north-west by the Thian Shan, and on the south by a line from the Botmanak pass, along the Chil Tagh range to the Tarim between the villages of Yaida Urteng and Yaka Kuduk. It is administered by a T'ung Chih and his assistant.

Under the Kashgar Taotai are,—the Maralbashi, Yangi Shar, Yangi Hissar, Yarkand, and Khotan Districts.

The Maralbashi district (T'ing) is situated at the junction of
 The Maralbashi district. the Tarim and Kashgar rivers, and is bounded on the north by the Utch Turfan district, on the west and south-west by the line of villages, Urdaklik, Tarim, and Lyangar Awat, and on the south-east by the Takla Makan desert. It is administered by a T'ung-p'an (the assistant of a T'ung Chih).

The Yangi Shar district (Chih-li Chou) is bounded on the north-
 The Yangi Shar district. east by the Utch Turfan and Maralbashi districts, on the north and west by the Russo-Chinese frontier, and on the south-east by the line of passes Ulug Rabat-Turbulung-Kuruk Art and by the villages Shar Mak-hale-Yapchan-Builik. The Chih Fu resides in Yangi Shar.

The greater part of the area of the district, namely, that lying to the north of the Kizil Su and to the west of the line Kashgar-Tash Malik, with the town of Kashgar, and the northern part of Sarikol (the Little Kara Kul, Bulun Kul, Muji, and Kiyak Bashi valleys), has been formed into a sub-district, the ruler of which resides in Kashgar old town.

Faizabad was in 1903 made into another sub-district under a Hsien Ch'eng.

The Yangi Hissar district (T'ing) consists of the Yangi Hissar
 The Yangi Hissar district. oasis from the Yapchan village on the north to Mayak Lyangar on the south, and in the mountain district of Kashgaria, the basins of the rivers Karatash, Kinkol, Chimgan, Urteng Tuz, and Chaarlun.

The T'ung Chih and his assistant reside in the Yangi Hissar fort.

The Yarkand district includes the whole of the Yarkand oasis
 The Yarkand district. (extending on the north to Lailik and Builik), the oases of Karghalik, Guma, Sanju, and Pialma, and all the south-western part of Kashgaria up to the frontiers of Russia, India, and Tibet. The Chih Chou and his assistant reside in the Yarkand fort. Subordinate to him are :—

- (1) The Hsien Ch'eng who administers the town of Yarkand under the supervision of the assistant of the Chih Chou.
- (2) The Chih Hsien of Karghalik, whose sub-district comprises the south-eastern part of the district, namely, the oases of Karghalik, Guma, and Sanju, the basin of the upper Tiznaf, and that of the Yarkand river below Kosarab.
- (3) The official in charge of the Sarikol sub-district, which includes, besides the southern part of Sarikol (the Karachukar, Taghdumbash, Tash Kurghan, and Tagharma valleys), the whole of the inhabited parts of the Raskam and Tash Kurghan rivers above Kosarab, and of their tributaries the Vacha, Chop, and Mariong. This official is usually appointed commander of the cavalry "lianza" at Tash Kurghan. He has a general supervision over the nomad and settled inhabitants of Sarikol, and carries on judicial investigations under the orders of the Yarkand Chih Chou, but has not the right to institute judicial proceedings. The inhabitants of Sarikol are under the jurisdiction of the Yarkand Chih Chou.

The Khotan district embraces the whole of the southern portion
 The Khotan district. of Kashgaria to the east of Pialma as far as Cherchen inclusive. The Chih Chou and his assistant live in the Khotan fort. The population of the native town are under the assistant, who is a Hsien Ch'eng.

Chira and the oases to the east of it, Keria, Polu, Nia, Cherchen, Achian, and Surghak form the Keria sub-district. The magistrate of the sub-district and his assistant live at Keria.

ADMINISTRATIVE SYSTEM.

The Hsun-Fu or Governor of the province is responsible for the well-being of the province and is its head in all branches of the administration. As regards the troops stationed in the province, the limits of the Governor's powers are very indefinite ; being responsible for the internal and external security of the province entrusted to him, he is responsible for the disposition of the troops, and has the right to control the actions, and interfere with the arrangements of the highest military authorities of the province, namely the

T'i Tu (commonly called the T'i-tai) or Provincial Commander-in-Chief at Kashgar, and the Tsung-ping or Brigade-General at Ili ; he is responsible for the due provision of pay, rations, forage, etc., for the troops. As regards drill and instruction, the troops are directly under the Tsung-ping, who has his own staff.

The immediate subordinates of the Governor are :—

The Pu-Cheng Shih-Ssu or Fan t'ai, who is the Lieutenant-Governor and Financial Commissioner (commonly called the Treasurer) of the province. He is responsible for the finances of the province, and controls the appointments to all civil administrative posts.

The An-Ch'a Shih-Ssu or Nieh t'ai, who is the Provincial Judge. He is the highest judicial authority of the province for the decision of law-suits and the trial of important criminal cases, such as murder and political offences.

The Fen Hsun Tao, or Tao-t'ai (by Europeans commonly called an Amban). A Tao-t'aiship is not a fixed territorial division entrusted to one man. A Tao-t'ai may be in charge of two, three or more districts, or may be in charge of a single branch of the provincial administration. The Tao-t'ai is not an administrator ; with reference to the districts entrusted to him, he is the guardian of the laws and their interpreter. He does not interfere with the arrangements of the local administrators, but he sees to the regular procedure of all, or only of certain branches of, the administration of the districts entrusted to him. Thus, for instance, the Tao-t'aies of Kashgaria are responsible for the irrigation, the collection of the taxes, and the post offices ; their judicial rights and duties consist in forwarding to the Nieh-t'ai, with their recommendations, all cases which are not within the powers of the district officials. The Tao-t'aies only have executive and judicial authority over the nomad population of the country—the Mongols of the Karashar district and the Kirghiz. The Kashgar Tao-t'ai also supervises, by means of a special official called a Tung-shang, all transactions with foreigners and the external trade of the district. His military powers, however, are very limited ; he only exercises a general supervision over the frontier posts. He can only alter existing arrangements with the consent of the commander of the troops ; to the latter are sent all reports from the frontier.

A district, sub-district, or town is administered, according to its importance, by a Chih Fu, T'ung Chih, T'ung-p'an, Chih Chou, Chih Hsien or Hsien Ch'eng. These officials are by law only concerned with the settled population of their districts. Their duties are very varied ; for instance, a Chih Hsien supervises the collection and

assessment of the taxes, the postal service, irrigation, schools, and the provision store-houses. Finally he is the Court of First Instance for ordinary cases, and he acts as examining magistrate in capital cases. A T'ung Chih or a Chih Chou, (the latter in portions of a district under his immediate authority), performs approximately similar duties, but has more extensive authority. The chief of a district has the power to confiscate property, to imprison for one year, to put a man in fetters, to chain him to an iron-bar, or to inflict corporal punishment the amount of which is limited only by his personal discretion. A sentence of death has to be confirmed by the Governor.

The above mentioned officials are always Chinese, the subordinate officials are usually natives, and consist of Begs, Aksakals, Ming Bashis, Yuz Bashis, Oan Bashis, and Kuk Bashis.

A Beg is responsible for one or more villages, or a portion of a town. The number of houses in a Begship may vary from 100 to 10,000. An Aksakal, or head of a trade, is responsible for a section of a town. These officials are usually Muhammadans, but wear Chinese dress and false pig-tails.

Ming Bashis, Yuz Bashis, and Oan Bashis are responsible for districts which consist respectively of about 1,000, 100, and 10 to 20 houses.

The duties of the Begs and Bashis consist chiefly in the preparation of the tax rolls, the collection of the taxes, and the apportionment among the cultivators of requisitions for forced labour and transport.

A Kuk Bashi is responsible for the irrigation of the area watered by one channel. He is elected to the appointment by the cultivators of his district, and is paid by a fixed contribution of grain from each cultivator.

The whole governmental system is rotten to the core, and every official from the Tsung-Tu to the meanest Oan Bashi lives by systematic plunder. The officials are unpaid, but since their right to "squeeze" is recognized, the amount of their income is limited by their own discretion and the resources of their districts. Public offices are always sold; justice is sold; the enjoyment of public rights, such as water-supply, can be secured only by bribes paid to the officials in charge, and there is no immunity whatever from exorbitant taxation, the proceeds of which go mostly to the private pockets of public officials. The district officials get their districts "for their sustenance" for a limited period, usually three years, and their sole aim is, not the improvement of the district, but the extraction from it of the largest possible sum in the time at their

disposal. Hsin Chiang is a poor province, and towards the cost of its administration the other provinces of China contribute annually about 200,000 taels, yet the Chinese officials in the province are understood to obtain, by the various means at their command, a good annual revenue.

The administration of justice is carried on in accordance with the methods prevalent in other departments of government. In civil actions fees are exacted from the litigants, while in criminal cases fines are inflicted when they are likely to be paid. Rich offenders are fined, the poor are beaten. Sentences of imprisonment are also passed, and for murder death is the sentence. The prisons are in a disgraceful condition. Corporal punishment is usually inflicted with a short stick on the back of the bare legs above the knees. The prisoner is held with his face to the ground, and the blows, rapidly given, cause a deep discolouration of the skin, which breaks if the punishment is unduly prolonged. Persons convicted of minor offences are sometimes loaded with a board (the cangue) 26 or 28 inches square, and weighing about 27lb, which is carried about their necks day and night for the prescribed time, which has been known to extend to a month. Old offenders are sometimes punished by having an iron bar chained to their neck and one leg for life. In districts where crime is very prevalent, there are two Begs, one of whom attends exclusively to magisterial work. In large towns there are a few "darogas" or police under a Beg. Guards are stationed at the gates of towns; those at the main gate levy an unauthorized octroi duty, but for the maintenance of those at the other gates each householder has to make a small payment.

The Kazi's courts, which are maintained by the native population, deal only with questions relating to marriages and inheritance, and with the witnessing of documents.

In Yarkand, Karghalik, and Khotan pauperism is very conspicuous. It is not generally known that slavery was abolished in Kashgaria as recently as 1897, over 2,000 slaves having been liberated during the 5 years 1893-97. This was due to representations made to the Indian Government by the British Agent at Kashgar. He was authorized to procure at fair compensation the release of all slaves who were British subjects. Mr. Macartney set about his task with so much zeal that he stirred up local interest in his favour and soon obtained the liberation, not only of slaves of Indian nationality, but of many others.

FINANCIAL SYSTEM.

In the collection of taxes "squeezing" is systematically employed. A certain sum is notified to the district official of each district

as the amount which he must provide ; but as there is no public intimation of this amount, the inhabitants have no means of checking the demands made upon them. The district officials consequently instruct the Begs to raise as much more than the regulation sum as they think the people will stand without making an outcry. The Begs, being unpaid, have to arrange for their own interests, and they instruct the Bashis, who do the actual collecting, to levy more than the district officers have asked, so that when the Bashis have added something on their own account the burden on the tax-payers is a heavy one.

The principal tax, the Yushur, or Yuzhur (literally one-tenth part) is levied on land which is classified under the headings " aral " or well-irrigated land, and " ak," or white land ; the land under each of these headings being of three qualities, which are taxed at different rates. No allowance is made for official errors in valuing the land. The tax is generally paid in kind, the recognized products being rice, wheat, Indian corn, chopped straw, wood and dried lucerne. It is not unusual for the officials to reject the produce offered on the ground that it is of inferior quality, until a present is tendered along with it, after which all objections are withdrawn. In three out of the fourteen Begships of the Yarkand district the land-tax is paid in cash, and though there is a certain authorized rate for the conversion from kind to cash, the actual rate at which it is effected is about 31 per cent. higher. The overcharge is further increased by the simple expedient of requiring, in payment of taxes, 21 tengas, instead of 16, to the sarr or tael.

Other taxes are :—

A tax on the sale of land, which is properly one-twentieth of the purchase price, but really amounts to one-tenth, and is paid by the purchaser.

Taxes on sales effected in the bazars, which are nominally one-twentieth of the sale price, and which are paid by the purchaser when the subject-matter of the sale is living animals, but by the vendor in all other cases.

Each *jewas*, or oil press, has to pay 3 tengas (7d.) monthly.

A rice mill pays from 1 to 2 sarrs (3 to 6 shillings) annually, and flour mills from 2 to 10 sarrs (6 to 30 shillings) annually, according to the output.

Gold-diggers are taxed to the extent of one-third of the gold which they find.

An indirect tax consists in the provision of labour or transport on certain occasions, and in the provision of horsed carts for the carriage of troops and Government property. The unit of

assessment for these duties is the "choka," or paying unit, which consists on an average of about 15 houses. In proportion to the demands made, each "choka" has to furnish one labourer, one cart, and on payment, a fixed quantity of building material, but the payment does not exceed one-tenth of the value of the materials taken.

Artisans in the towns, who are formed into guilds under a "chong-ust," are obliged, on demand, to work for Government for five days in a month at a rate of 80 pul (about 4*d.*) per working day. Beyond this period work is paid for by agreement.

In addition to the regular taxes, the local authorities occasionally invent special taxes for their own special benefit.

The nomad tribes are administered by Begs, assisted by Yuz Bashis and Illik Bashis (heads of fifties).

They pay no taxes to the Chinese Government, but the Begs are paid by the "heraj" and "zyaket" taxes. The former is paid only by those nomads who are engaged in agriculture, and amounts to one-fifteenth of the annual produce of their fields. "Zyaket" is paid by stock-owning nomads, and amounts to 1 sheep, or 20 *tenga* (about 4*s.*) per 100 sheep, or 10 horses, or 5 camels. Horned cattle are not taxed. They are also obliged to provide fuel at fixed rates in the forts on the Naryn and Irkeshtam roads, and to maintain, also on payment, at certain posts a fixed number of postal "jigits," and guards for the watching of the frontier.

MONEY.

The present monetary system of Kashgaria is as follows:—

		£ s. d.
1 yamba	= 50 sarr	= 7 10 0
1 sarr or tael	= 16 <i>tenga</i>	= 0 3 0 = 10 miskal = 38 grammes
		of silver.
1 miskal	= 40 <i>darechin</i>	= 0 0 3½
1 <i>tenga</i>	= 25 <i>darechin</i>	= 0 0 2½
1 <i>darechin</i>		= 0 0 .09

Formerly, (but these coins are now obsolete)—

1 <i>tenga</i>	= 50 pul	
1 miskal	= 80 pul	= 10 pung = 100 1 <i>i.</i>

The yamba seldom weighs exactly 50 sarr, and its value consequently fluctuates between about 49 and 51 sarr.

The gold value of the sarr also varies considerably. In the year 1900 its value varied from 2*s.* 8*d.* to 4*s.* 9*d.*

The silver coins in use are,—the tenga, miskal, 2, 3 and 5 miskal pieces 8, tenga or $\frac{1}{2}$ sarr, the sarr, and the yamba.

The darchin is a round copper coin with a square hole punched in it.

WEIGHTS AND MEASURES.

The following weights and measures are current in the other provinces of the Shen-Kan Viceroyalty, and are believed to be also current in Kashgaria.

Weights.

10 li	= 1 fen (candareen)	= .0133 oz.
10 fen	= 1 ch'ien (mace)	= .133 oz.
10 ch'ien	= 1 liang (tael or ounce)	= 1.33 oz.
16 liang	= 1 chin (catty)	= 1.33 lb.
100 chin	= 1 tan (picul)	= 133.0 lb.

The picul is usually taken as equal to 133lb avoirdupois. The liang, or tael, when used for weighing silver, varies in different parts of China. The customs, or Hai Kwan, tael is fixed; its weight is 582.9 grains = 37.783 grammes.

Linear Measure.

10 fen	= 1 ts'un	= 1.31 inches.
10 ts'un	= 1 ch'ih	= 13.1 inches.
10 ch'ih	= 1 chang	= 11.0 feet.

A Chinese foot equals 13.1 inches approximately. A p'u is a pace of 2 ch'ih. The standard of distance is the li or Chinese mile, generally taken as about one-third of an English mile. Travelling in flat open country 10 li are usually taken as an hour's march. The stages vary from 70 to 80 li.

Square Measure.

240 square p'u	= 1 mou (Chinese acre).
100 mou	= 1 ching.

The mou or Chinese acre is equal to about .6 of an English acre.

Measures of Capacity.

10 ho	= 1 sheng.
10 sheng	= 1 tan.
10 tan	= 1 shih.

These measures are used for grain, etc. Milk and wine are sold by weight.

CHAPTER IX.

MILITARY INFORMATION.

[Peace and war formations ; Organization and numbers ; Establishments ; Military administration.]

PEACE AND WAR FORMATIONS.

THE Chinese troops, as soldiers, and the Chinese military administration, from the point of view of efficiency, are beneath contempt. The peace formations of the infantry consist in the performance of complicated, but senseless, evolutions which are supposed to represent "screws" or "dragons," and in which the medley of moving colours no doubt produces an interesting spectacle, but which have no more military value than the ballet of a theatre. To cover the movement, or deployment, of the other arms, the cavalry form "troop squares." In this formation each troop circles round in file at the trot or canter, the men firing from their horses in turn. Alternate troops circle to the right and to the left. If acting against infantry, the cavalry would divide into groups and gallop round and round the enemy, approaching and then retiring, and endeavouring to throw them into confusion by fire. A few years ago some drill instructors trained by foreign officers at Tientsin were sent to the province for the purpose of imparting modern instruction, but the T'i-t'ai was indignant at the imputation of inefficiency, and promptly dismissed the innovating instructors, stating that the troops under his command were quite effective and not in need of their services. At an artillery inspection held not many years ago the inspecting officer wished one of the guns to be fired, but could find no one who understood how to work the pieces. At length an officer, with more gallantry than skill, loaded the gun and fired ; but when he fired, he stood close behind the gun, so that he was knocked down by the recoil and received such injuries that he died within a few days.

ORGANIZATION AND NUMBERS.

An infantry battalion nominally consists of 10 officers, 40 non-commissioned officers, 380 privates, and 80 followers. It is divided into 5 companies, of which 4, (the Advanced Guard, Rear-Guard, and Right and Left Flank Guard Companies), consist each of 2 officers, 9 non-commissioned officers, 85 privates, and 18 followers, and the 5th Company (the Commandant's Company), consists of 2 officers, 4 non-commissioned officers, 40 privates, and 8 followers.

ESTABLISHMENTS.

Nominal establishments of a Battalion and a Squadron.

Units.	OFFICERS.					LOWER RANKS COMBATANTS.			Followers.
	Commandant.	Assistant.	Coy. Comdrs.	Subalterns.	Total officers.	N. C. O's.	Privates.	Total R. & F.	
INFANTRY BATTALION.									
<i>Commander's Company.</i>	..	..	..	..	..	..	4	4	..
Bodyguard section ..	..	..	..	..	..	1	9	10	2
4 other sections, @ ..	..	..	..	..	..
Total of Commander's Company.	1	1	..	..	2	4	40	44	8
<i>Ordinary Company.</i>	..	..	..	..	..	..	4	4	..
Bodyguard section ..	..	..	..	..	..	..	4	4	..
9 other sections, @ ..	..	..	..	..	..	1	9	10	2
Total of ordinary company.	..	..	1	1	2	9	85	94	18
<i>Battalion.</i>									
1 Commander's Company	1	1	..	..	2	4	40	44	8
4 other companies ..	..	..	4	4	8	36	340	376	72
Total of a Battalion ..	1	1	4	4	10	40	380	420	80
<i>CAVALRY.</i>									
A squadron consists of	1	..	..	2	3	11	114	125	1

There is no accurate information available as to the organization of the squadron, but the *paper* strength is as above, and it is divided into 3 troops, which are sub-divided into four sections on a system similar to that in the infantry.

There are in Kashgaria 16 battalions, 23 squadrons, and 48 guns, of sorts, which are stationed as follows¹ :—

UNDER THE KASHGAR T'I-T'AI.

Stations.		Battalions.	Squadrons.	Guns.	REMARKS.
Ulugchat	..	..	1	..	Finding a post of six men at Eghin.
Tash Kurg'ian	..	..	1	1	Finding a post at Tagharma in summer.
Altin Artish	..	..	1	1	
Upal and Tash Malik	..	..	1	1	
Old Kashgar (Kunya Gulbakh)	..	1	1	2	Finding posts, infantry at Min Ui and Karangalik, cavalry at Chakmak and Teshik Tash.
Yangi Shar	..	..	5	4	25
Faizabad	..	..	..	1	..
Bulun Kul	..	..	..	1	..
Yangi Hissar	..	..	1	1	6
Yarkand	..	..	4	1	2
Maralbashi	..	..	1	..	
Karghalik	..	..	..	1	..
Khotan	..	..	1	..	
Keria	..	..	..	..	1 troop from Khotan.
Total	..	10	15	38	

UNDER THE AKSU TSUNG-PING.

Utech Turfan	..	..	1	2	4
Aksu	..	..	2	3	6
Bai	..	..	..	1	..
Kuchar	..	..	1	..	..
Karashar	..	..	1	1	..
Dural	..	..	1	1	..
Total	..	6	8	10	
Total for Kashgaria	..	16	23	48	

¹ Figures given in Colonel Korniloff's *Kashgaria*, dated 1903.

A comparison of the foregoing table with the following report by Mr. Macartney, dated 1904, which gives what is believed to be the actual numbers serving in the Kashgar command, is instructive.

Station.	NUMBER OF SOLDIERS.			Artil- lery.	REMARKS. (Alterations.)
	Infantry	Cavalry.			
Ulugchat	50	..
Tash Kurghan	18	..
Upil	50	..
Old Kashgar (Kunya Gulbahk)	160	50	..	
Yangi Shar	1,040	50	40	
Bulun Kul	30	..
Yangi Hissar	160	50	..
Yarkand	160	..	..
Maralbashi	160	..	..
Karghalik	50	..
Khotan	160	..	..
Keria	50	..
Totals	1,840	398	40	

The actual strength of a battalion or squadron does not in any way correspond with that laid down, units being almost always at least 30 % below their paper strength, the difference between their actual and nominal cost remaining in the pocket of the commander. Each unit bears the name of its commander, and changes its name with its commander. Units are formed and disbanded by order of the War Minister, or the Commander-in-Chief of the district. On the receipt of orders to form a new "lianza," the commander is named, and to him is left the carrying out of the orders. His banner is raised in the bazars and other frequented places, the conditions under which men desiring service

will be accepted are given out in detail, drums are beaten to attract the attention of passers-by, and under the standard sit writers, who enter all who wish on the list. When the list is filled, the aspirants are collected and the "lianza" is considered as formed.

Non-commissioned officers are appointed by the commander, and officers by the Officer Commanding the troops. There are no schools of instruction for officers or non-commissioned officers. The intelligence of the officers is on very much the same level as that of the men. They are promoted by the Tsung-ping or other commanders without examination, or only after trial of their activity and strength in such feats as shooting with the bow, fencing with two swords at a time, lifting heavy weights, etc. A knowledge of how to read and write is not a necessity, and a recent commander-in-chief in Kashgaria could neither read nor write.

After appointment, further promotion up to the sixth rank can be given by the Tsung-ping. Officers are promoted to the 7th and 8th ranks by the T'i-t'ai, and promotion to the rank of general is confirmed by the Emperor. Officers wear on the breast of their coats embroidered badges in gold and silver representing tigers, and other fierce animals. There are no orders regulating leave, which depends entirely on the local authority.

No term of service is laid down in the Chinese army. A man who enrolls himself can only resign by permission of the commander of the "lianza." Desertion is punished with death. Officers cannot retire without the permission of the authorities. Age is not considered in the Chinese army; boys, almost children, of from 15 to 16 years of age are to be seen in the ranks as well as old men of 50; only absolute decrepitude gives any right to retirement. There is also no term of service laid down for horses—they are made use of as long as they are capable of being employed. In the purchase of horses, no rules are observed as to size or colour. Mules are used equally with horses, and even in preference to them. All the chief officials use them for riding purposes, and they are used for draught, both in the artillery and in the transport. Officers buy their own horses, and keep amblers in preference to any others.

Armament.

An infantry battalion is armed with at least six different patterns of fire-arms, from rifles made in the "sixties" of the last century down to modern magazine rifles, but all alike are almost useless from dirt and neglect. Some men have bayonets or short swords, others have not.

The cavalry are armed with carbines (varying from smooth-bores to magazine carbines), lances, and swords. The carbines are in much the same condition as the rifles of the infantry. The swords are of local manufacture, badly tempered, and useless.

The artillery are equipped with field and mountain guns of various calibres, some made of steel and some of bronze.

MILITARY ADMINISTRATION.

Each unit is administered by its commandant, who draws pay, rations, etc., for the full strength of the unit and disburses as little as possible.

The monthly rates of pay, in sarrs, are as follows:—

Appointments.	Cavalry.	Infantry.	REMARKS.
	Sarrs.	Sarrs.	
Battalion Commander..	120
Squadron Commander..	..	50	..
Company Commander..	40
Subalterns..	..	36	32
Non-Commissioned Officers	..	6	4.2
Privates	5.6	3.6
Followers	2	2

Non-commissioned officers and privates receive a daily ration of 2lb of wheat flour, or $2\frac{2}{3}$ lb of grain, all other food has to be provided by the soldier himself. They grow considerable quantities of vegetables in the neighbourhood of the barracks. The officers receive larger rations, but the amount does not seem to be laid down.

The men receive an annual gratis issue of a coat, a waistcoat, Uniform. a split-up apron, and a pair of cotton leggings, all other articles of dress have to be paid for by the soldiers.

There are no pensions on retirement, but non-commissioned Pensions. officers and men who have served more than 20 years receive a small gratuity, if discharged on account of wounds or illness.

In the Chinese army no respect is paid to rank, and soldiers only pay attention to, and obey, their own immediate superiors. Discipline is so slack that soldiers on duty do not trouble themselves to rise on the approach of officers other than their own immediate superiors. Punishments are very severe. There is no such thing as a court-martial, but punishments are inflicted at the discretion of the officer who orders them. Disobedience or neglect of orders is punished with the stick. More important crimes, such as insubordination or desertion, are punished with death. All officers have unlimited power to flog ; death can only be confirmed by the Hsun-Fu (Fu-t'ai). Officers can be punished by reduction in rank or pay, dismissal from the service, and by corporal punishment, with or without deprivation of rank. Pay is always in arrears and the men always want opium. The commander of the unit lends money at interest and sells opium to the soldiers at something over the market rate. At the quarterly pay-day the debts are all cleared by the simple method of deducting the amount from the pay due.

CHAPTER X.

POLITICAL.

[Internal relations ; External relations.]

INTERNAL RELATIONS.

THE natives are on the whole well affected towards the present Government. The Chinese yoke does not weigh heavily on them. Taxation is light, and there is a sort of old-fashioned justice administered to them by the Chinese tribunals, which, although frequently liable to miscarriage, satisfies their requirements. The Chinese do, it is true, nothing to improve the country ; but improvements are not what a backward race like the Sarts clamour for. Much wealth has, moreover, been accumulated by the people during the years of peace, which Turkistan has enjoyed under the temperate rule of the Chinese, and there is no sedative more powerful with a naturally apathetic race like this than that derived from the worship of mammon. One characteristic of the natives is worth remarking ; it is their entire want of patriotism as Sarts. Each city retains its own individuality, and there is no one who possesses sufficient influence amongst the population of the different towns to unite them, so as to make common cause against a common danger. Such being the nature of the people, they would simply submit to a Russian occupation whenever it should take place. There is no disposition amongst them, however, to court such an occupation, King Log being more suitable to them than King Stork. Besides, there exists an antipathy of race between the Andijanis and the Sarts, and any arrangement which would tend to bring them into closer relationship would be disagreeable to the latter.

EXTERNAL RELATIONS.

The Chinese are conscious that strategically the Kashgarian province is at the mercy of Russia. An invasion is thoroughly realized by them as within the sphere of possibility, but since the war the prevailing idea seems to be that Russia no longer has designs on the country.

The magnitude of the Russian trade which, unlike the British, is comparatively free from the hindrances of physical obstacles, is another source of Russian power. Caravans are passing practically all the year round, backwards and forwards, between Kashgar on the one side and Osh and Naryn on the other. Literally thousands of people, and these principally Chinese subjects, are dependent on the traffic for their livelihood. True, merchants with a large capital are in a very small minority, but this fact, far from detracting from the stability of Russian trade, is really its chief element of strength, for the trade is not in the hands of a few capitalists ruling

the market, but in those of a multitude of competing pedlars, who, because they seek from it not a fortune, but a bare subsistence, sell their goods at the lowest possible rates. Russian money readily circulates in all the towns of Kashgaria. The rouble, and not Chinese silver, has become the standard of value in all transactions connected with Russian commerce, and considering the large proportion which this commerce bears to the general traffic of the country, the question may well be asked whether Russian money is not destined to become, a few years hence, the ordinary coinage in these parts.

It can easily be understood how a trade, so vigorous and extensive, is a political lever in Russia's hands. Does a Chinese official show any sloth in recovering the debts due to a Russian subject? A complaint is unceremoniously preferred against him by the Russian Consul to the higher authorities. Is there any smuggling of *charas* into Russian territory? Then the Chinese Military Officer at Ulugchat must be held responsible for it, and be removed. Has a Chinese subject, engaged in Russian trade, the misfortune to incur the displeasure of the Russian representative? He is prohibited from trading with Russia, and finds himself deprived of his ordinary means of livelihood. Is there the slightest unrest in the country, whether it be due to Chinese misrule or to a missionary trouble? The Russians must advise and intervene on the score of the danger threatening the property of their merchants. Aksakals for watching over the interests of Russian subjects must be established in all the towns; and they of course must have a voice in all local concerns. In order to facilitate the examination of goods for Russia, a Russian Custom House must be established in Kashgar; so that facilities might be given to traders to make remittances between Russia and Chinese territories, a Russo-Chinese Bank must be established; and doubtless in a short time, when the bank is fairly in working order, we shall see it occupying as important a position from a political point of view, as it does in China Proper and Persia. Already signs are not wanting of the important rôle it is destined to play. It has made an alliance with one of the large Russian Carrying Companies with a view to acquiring the monopoly of the transport of goods between Kashgar and Russian Turkistan. And some important financial operations are contemplated, whereby the circulation of the rouble in Kashgar is to be facilitated by permanently fixing the silver value of Russian money.

The Russians are represented in Kashgaria by a Consul with a considerable staff and a Cossack escort at Kashgar, and by aksakals, or native consular subordinates, at Aksu, Maralbashi, Kashgar, Yangi Hissar, Yarkand, Karghalik, Khotan, and Keria.

The British are represented by Mr. G. Macartney, C.I.E., whose title is "Special Assistant for Chinese Affairs to the Resident in Kashmir." His appointment as Consul has not yet been recognized by the Chinese, but his position, despite his unofficial status, is strong and influential. We are also represented by aksakals at Maralbashi, Kashgar, Yangi Hissar, Yarkand, Karghalik, and Khotan. In the opinion of Mr. Fraser British prestige stands as high as Russian.

Lieutenant W. L. Campbell, R.G.A., who travelled through Kashgaria in 1903, says: 'Colonel Prjevalski, writing 20 years ago, relates how the Turki people were waiting to be taken under the protection of the White Tzar, but the feeling, if it ever existed outside the imagination of that eloquent explorer, has ceased to exist. Wherever I stopped at the smaller villages, where there were no Chinese, I was received as a friend and given the best of everything they had and this because I was a "Feringhi." On one occasion the "t'ing-ch'ai," who accompanied us from yamen to yamen, told the villagers that we were Russians, and until my orderly explained to them who we were, they held aloof and gave us no provisions. In the towns, where we were officially provided for by the Chinese, there was less opportunity of judging the temper of the people. Much has been written on this theme by Colonel Bell, Captain Younghusband, Carey, Dalgleish, and others who have visited Chinese Central Asia, but from what I heard and saw I came to the conclusion that the more the people get to know about the foreigners in their midst, and realize the difference between the British and Russian Empires, the less they regard the Russians as the coming saviours of their country. In the last ten years this change of public feeling has been more rapid, but in the absence of anyone to record it, the impressions of travellers in the early nineties have remained the only source of information.'

APPENDIX A.

LIST OF AUTHORITIES CONSULTED :

Reports by G. Macartney, Esq., C.I.E.

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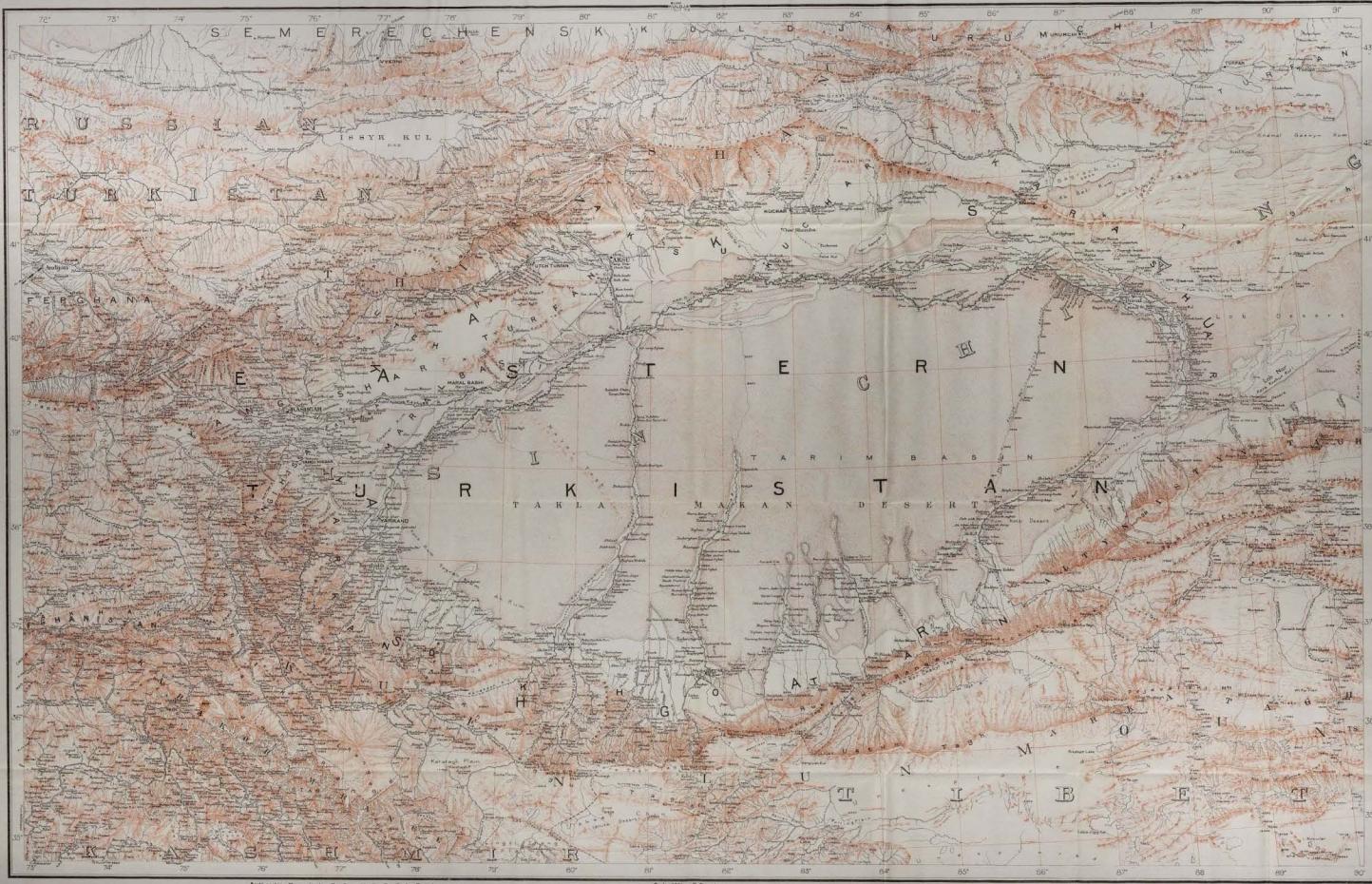
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355 85

MICROFILM

MAP OF KASHGARIA

FOR OFFICIAL USE ONLY



Authorities Consulted: Dr. B. V. Hedin, Dr. Stein, Russian
Staff Maps, Dassy, Merchiston, Royal Geographical Society's
Maps, Rawlinson, Hargreaves, and Survey of India Maps.

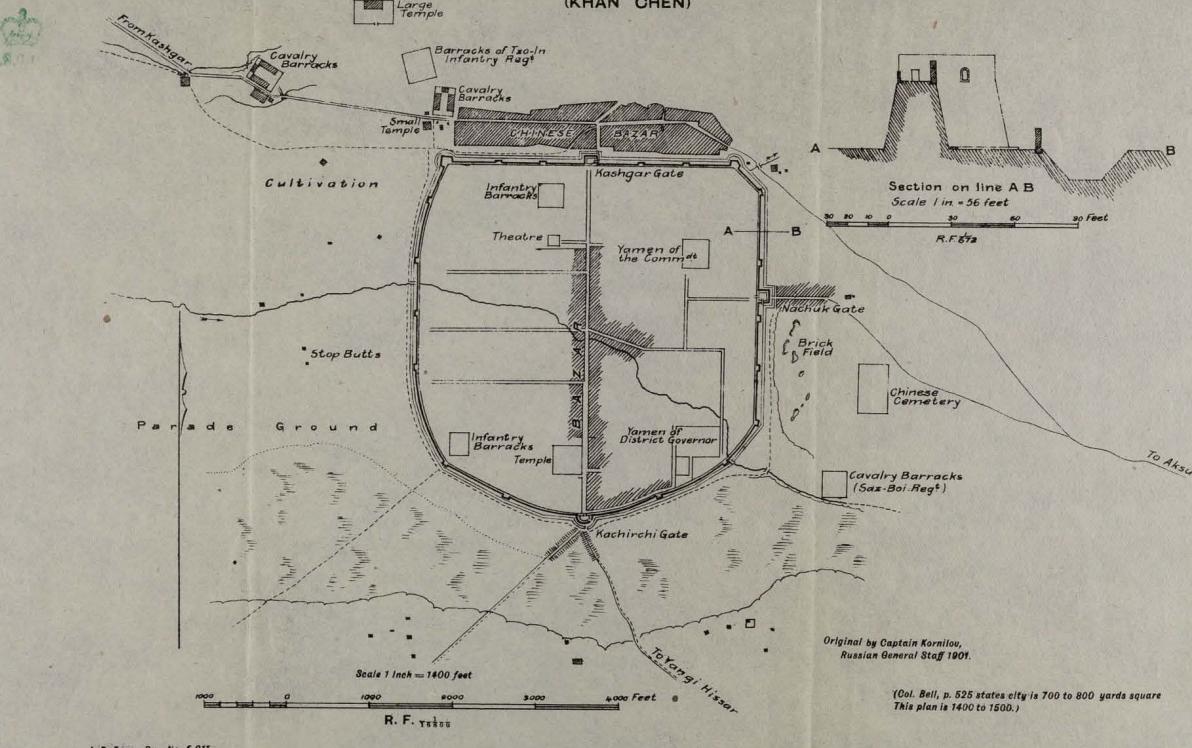
Scale of Miles: R. F. 1 mile
Approximately 1 inch = 20 miles

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No. 4,165,L, 1907.



PLAN OF THE FORT
OF
KASHGAR YANGI SHAR
(KHAN CHEN)



Original by Captain Kornilov,
Russian General Staff 1901.

(Col. Bell, p. 525 states city is 700 to 800 yards square
This plan is 1400 to 1500.)

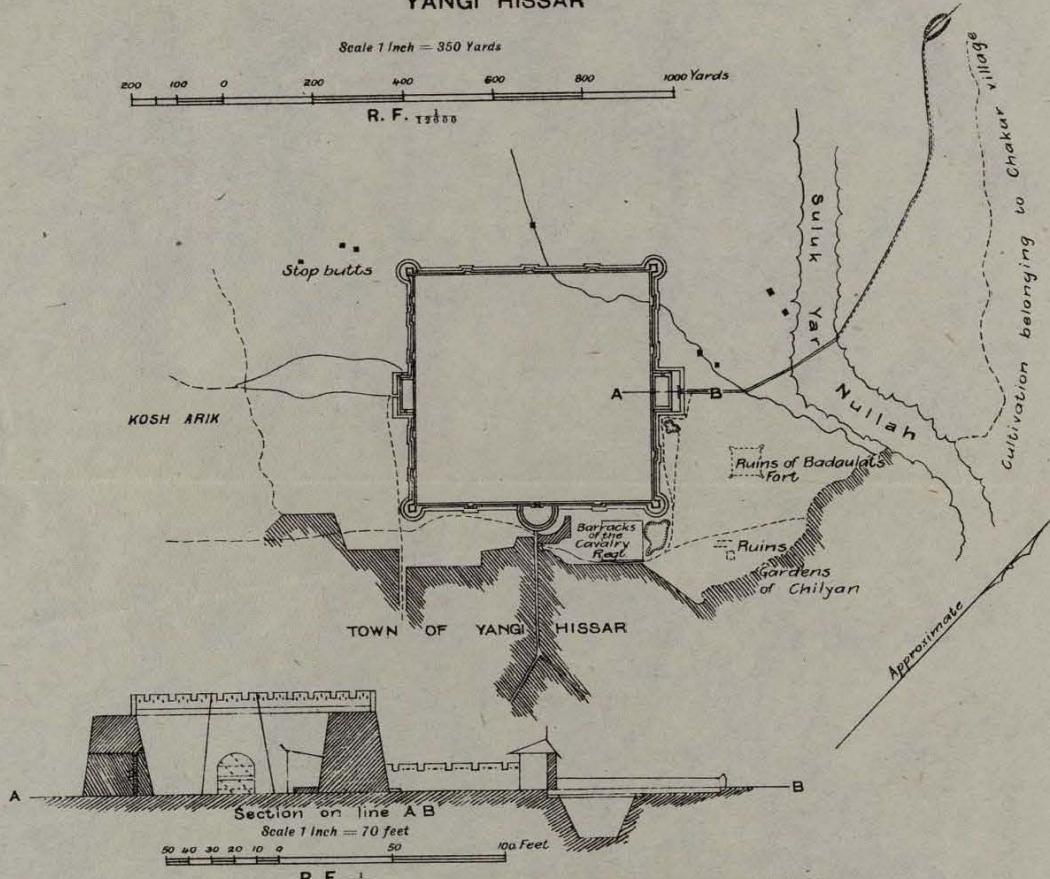
No. 3,773-I., 1906.

I. B. Topo. Dy. No. 5,911.
Exd. O. J. A., April 1906.

PLAN OF THE FORT
AT
YANGI HISSAR

Scale 1 Inch = 350 Yards

200 100 0 200 400 600 800 1000 Yards
R. F. 13850



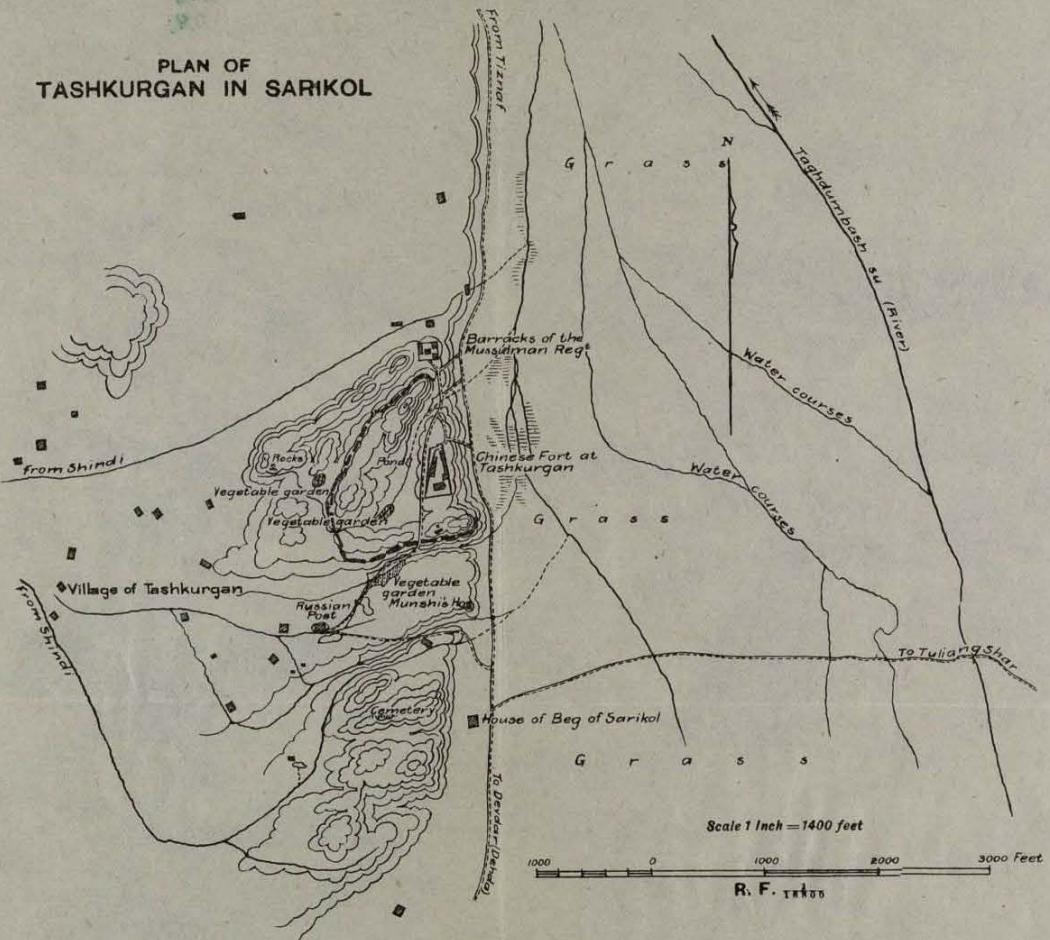
Original by Captain Kornilov,
Russian General Staff 1900,

N. B.—There was no north point on the Russian Sketch. That put in is
obtained by comparing various different descriptions of the Fort.

I. B. Topo. Dy. No. 5.910.
Exd. C. J. A., April 1906.

No. 3,772-I, 1906.

PLAN OF
TASHKURGAN IN SARIKOL

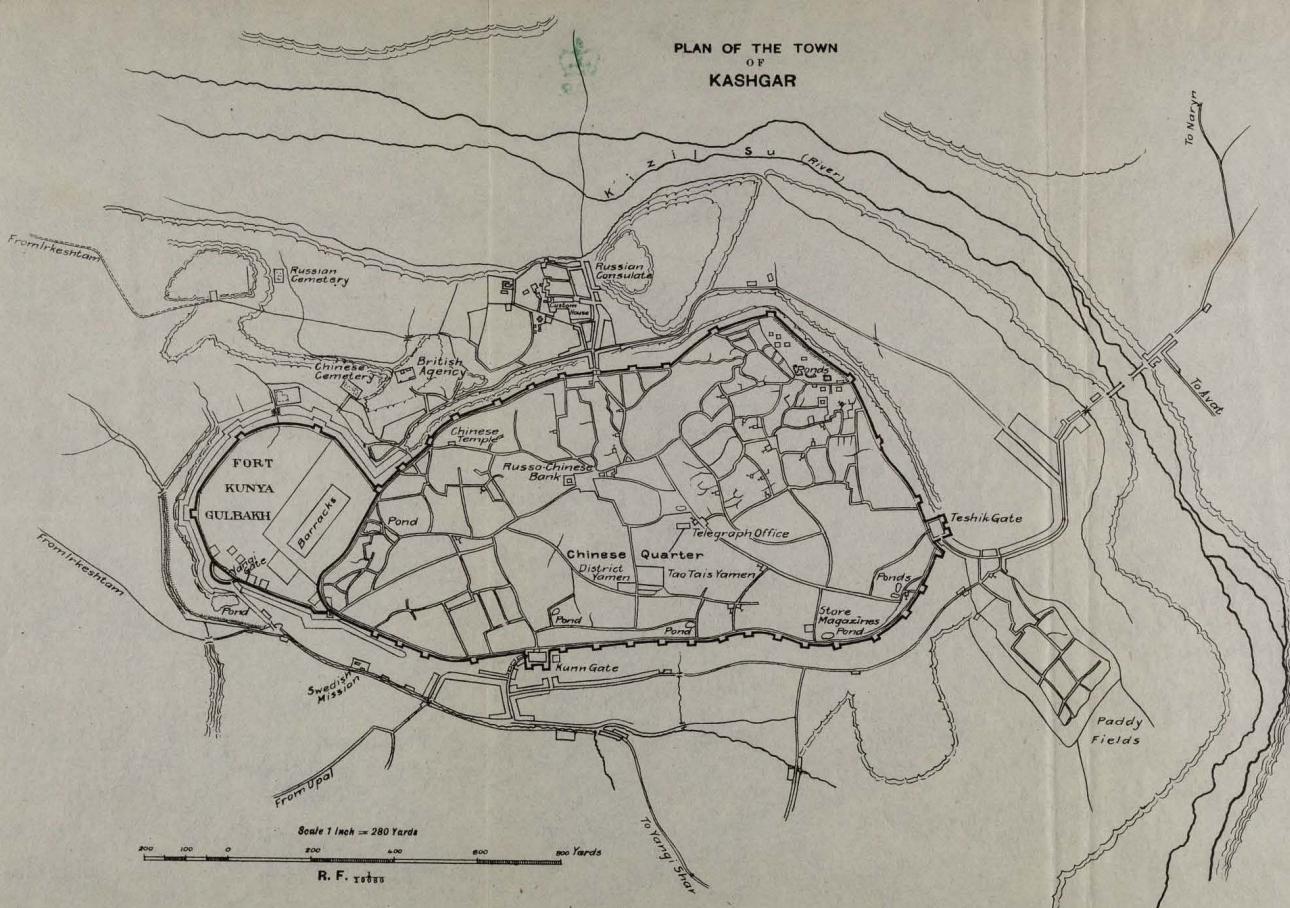


I. B. Topo. Dy. No. 5,909.
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*Original by Lt. Col. Kornilov,
29th June 1901.
12th July 1901.*

No. 3,771-I., 1906.

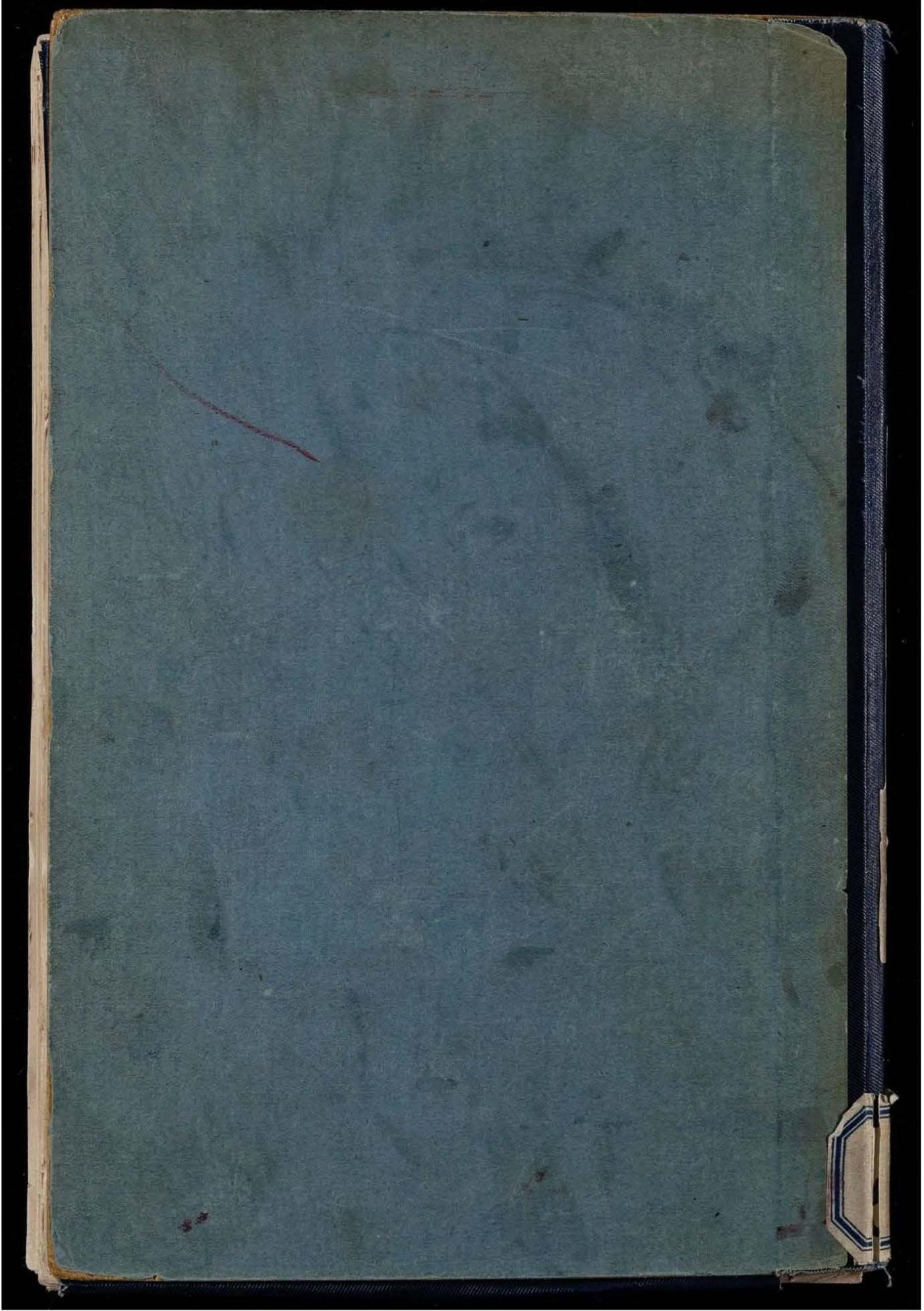
PLAN OF THE TOWN
OF
KASHGAR



I. B. Topo. Dy. No. 5.012
Exd. C. J. A., April 1906.

Original by Suo Lieut. Kirilov,
3rd Turkestan Rifle Bn. '900.

No. 3.774-I, 1906.



Military Report on Kashgaria .

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